

AMERICAN BEE JOURNAL

LIBRARY
RECEIVED

APR 2 1923

UNIVERSITY OF MINNESOTA
LIBRARY

APRIL, 1923



BLOSSOMS OF LOGWOOD, A FOREST TREE WHICH IS AN IMPORTANT SOURCE OF HONEY IN THE WEST INDIES AND CENTRAL AMERICA. DARK-SKINNED PEOPLE COMPOSE THE GREATER PART OF THE NATIVE POPULATION. (See Sechrist's article in this number).

RECEIVE OUR 1923 CATALOG?

IT'S A "SURPRISE"

THINK of being able to buy
Medium Brood Foundation
in five pound boxes
at 65c per pound,
and Hoffman
Frames at \$5.90 per
100. Hives for al-
most half the price
of a few years ago.
Get our catalog--It's
a big money saver for you.



Freight on Bee
Supplies takes
3rd and 4th class
rates. We ship
everywhere and
save you money
regardless of
where you live.

All this and QUALITY too when
you deal with THE HOUSE
OF MUTH

THE FRED W. MUTH CO.

"THE BUSY BEE MEN"

CINCINNATI, O.

T-SHAPED FORM BLOCK

The sharp edge of hot plate slides under T-tin when cutting off foundations.

SLIDE SPRING ON FORM BLOCK

Holds section securely on the block while it is being reversed.

HAND LEVER

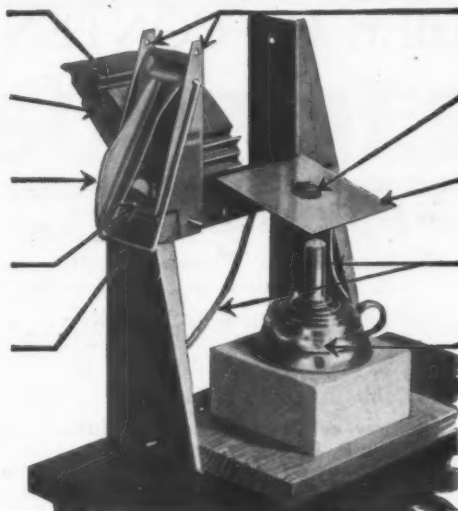
Which quickly fastens dovetails of section.

THUMB ADJUSTING NUT

Permits lever post to be moved backward and forward for sections of different sizes.

TRUSS WIRE

May be swung over opposite post when fastening dovetails if desired.

**ADJUSTABLE LEVER**

These holes in frame permit raising for use with taller sections.

HOT PLATE NUT

Permits hot plate to be tilted at just the right angle.

HOT PLATE

Melts edges of foundation, then cuts large piece off to make smaller bottom starter.

WIRES SUPPORTING HOT PLATE

Permits it to move to and from the form block.

ALCOHOL LAMP

Hot plate tilts over lamp when not in use, permitting surplus wax to run off back edge.

SIMPLE, SURE, SPEEDY

You cannot afford to do without the **Woodman** combined section press and foundation fastener. It folds comb honey sections and fastens top and bottom foundation starters at one handling at a great saving in time and money.

Fastest Fixer Made. The **WOODMAN** Fixer is a very fast machine. With a little experience you can easily handle 100 to 200 sections an hour, setting both top and bottom starters. With the machine, a slow and disagreeable job becomes very easy and simple.

Delivers Right Side Up. The **WOODMAN** Section Fixer is the only machine from which the section comes away right side up, with the large starter hanging down. They do not become loosened in reversing as with other machines.

More Money for Your Honey. Because with top and bottom starters you are assured of straight combs well attached to all four sides

—a requirement to grade fancy. The hot plate fastens both top and bottom starters securely.

Easy to Use. Since you are always handling large pieces of foundation, the **WOODMAN** Fixer is much more easily used than any other machine. By ordinary means, only an expert can set the small starter at all but with the **WOODMAN** this is accomplished very easily and quickly.

Hundreds Sold. The **WOODMAN** Fixer is the most successful and popular machine on the market. Every buyer is enthusiastic. Adjusts quickly to handle different size sections. If you have but 10 swarms, you cannot afford to do without it.

A postal brings full information and price. Our complete catalog of beekeepers' supplies and accessories free for the asking. Write for it.

A. G. WOODMAN COMPANY

SOLE MANUFACTURERS

204 Scribner Ave., N. W.

Grand Rapids, Mich.



WOODMAN'S

SECTION FIXER

TABLE OF CONTENTS

Beekeeping in Haiti and the Dominican Republic—E. L. Se-crist	167	Park	179	Honey Candies—D. C. Gilham	185
Prof. Gaston Bonnier—C. P. Da-dant	170	Pioneers of American Beekeeping—J. H. Merrill	180	What are the Most Derivable Im-provements in Bee Culture—Charles Dadant	186
Practical Significance of Life His-tory—Ralph Parker	171	Men who have made American Beekeeping—Burton N. Gates	181	Bee Pasture in Southeast Missouri—L. A. Schott	186
Editorials	172-3	Making Beekeeping a Business—E. M. Cole	181	Vocaional Work in Beekeeping—M. G. Dadant	187
Demonstration Apiaries—N. I. Lyle	174	California's Best Known Beeman Hy. W. Sanders	182	The Huber Letters	187
Marketing of Honey—G. C. Mat-thews	176	Combless Packages vs. Nuclei—Jes Dalton	183	Temperature of the Bee's Body—Dr. Brunnich	188
Evolution of the Swarming Im-pulse—Allen Latham	178	Better Keep Covered—L. H. Cobb	183	A Circular House Apiary	189
The Observation Hive—Wallace		Shallow or Deep Extracting Sup-ers—E. F. Atwater	184	Editor's Answers	190-1-2

DO YOU KNOW

One or two pounds of young bees added to a colony of bees in the spring will often double the honey crop. DO YOU KNOW when you buy bees and queens it pays to buy the best.

FOREHAND'S THREE-BANDS have been on the market for thirty years. They are giving satisfaction in every state in the union and nearly all foreign coun-tries. They have a world-wide reputation for honey gathering, disease resisting, gentleness and non swarming.

PRICES ON QUEENS.

	Up to July 1st.				
	1 to 4	5 to 11	12 to 24	25 to 99	100 up
Untested	\$1.25	\$1.20	\$1.15	\$1.10	\$1.05
Select untested	1.50	1.45	1.40	1.35	1.30
Tested	2.50	2.45	2.40		
Select tested	4.00	3.95			

Breeding Queens from \$10.00 to \$20.00.

POUND BEES.

	1	25 and up
One pound package	\$2.50	\$2.25
Two pound package	4.00	3.75
Three pound package	5.50	5.25

Add the price of queen wanted.

Send us your order today. Only ten per cent required for booking order. We take all the risk when you have your order booked with us. If there's a re-duction in price before your order is shipped, we refund you the difference, and if you over-estimate your needs, or something happens that will make it unprofitable for you to use the bees or queens, notify us fifteen days before shipping date and we will refund your deposits.

Guarantee: We guarantee every queen will be purely mated, to reach her des-tination alive in good condition and to give perfect satisfaction. We guarantee all bees will reach their destination alive and in good condition. Safe delivery guar-anteed in U. S. and Canada only. Send for booklet. It tells how FOREHAND'S THREE-BANDS are reared.

W. J. FOREHAND & SONS L. L. FOREHAND, MGR.
FT. DEPOSIT, ALA.

Here Is Your Chance

From factory to you, our excellent made material at attractive prices. Send in a list of your needs of BEE SUPPLIES for the coming sea-son and get quotations on it.

Langstroth portico 8 and 10-frame hives and supers, also 8-frame 4x5 comb-honey supers at cost prices, while they last.

CHARLES MONDENG

146 Newton Ave. N. and 159 Cedar Lake Road
MINNEAPOLIS, MINN.

Statement of the Ownership, Man-agement, Circulation, Etc., required by the act of Congress of August 24, 1912, of American Bee Journal, published monthly at Hamilton, Illi-nois for April, 1923.

STATE OF ILLINOIS, } ss.

COUNTY OF HANCOCK. }
Before me, a Notary Public, in and for the State and County aforesaid, personally ap-peared M. G. Dadant, who having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true state-ment of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, rendered by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse side of this form, to-wit:

1. That the names and addresses of the pub-lisher, editor, managing editor and business manager are:

Publishers, American Bee Journal, Hamilton, Ill.

Editor, C. P. Dadant, Hamilton, Ill.

Managing Editor, Frank C. Pellett, Hamil-ton, Ill.

Business Manager, M. G. Dadant, Hamilton, Ill.

2. That the owners are:

C. P. Dadant, Hamilton, Ill.

H. C. Dadant, Hamilton, Ill.

V. M. Dadant, Hamilton, Ill.

C. S. Dadant, Hamilton, Ill.

L. C. Dadant, Hamilton, Ill.

M. G. Dadant, Hamilton, Ill.

Leon Saugier, Hamilton, Ill.

Jos. Saugier, Hamilton, Ill.

That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgages or other securities, are: None.

(Signed) M. G. DADANT.

Sworn to and subscribed before me this 1st day of April, 1923.

MARY EARLS (formerly Mary McCoy),

Notary Public.

My commission expires January 17, 1924.

Brookside Apiaries

If it's more than ordinary queens you want, write us about our new Italian-Carniolan 1st cross strain. We will have full colonies at \$10. Write for particulars.

O. E. TIMM, Prop.
Bennington, Nebraska.

MONEY AND SATISFACTION FOR YOU

Save one profit by buying direct from fac-tory. Standard, Jumbo and Modified Dadant Hives; cedar or pine. Write for catalog.

A. E. BURDICK, CO.
Sunnyside, Wash.

A SUPERIOR QUALITY
AT LESS COST

SUPPLIES

A SUPERIOR QUALITY
AT LESS COST

(MADE BY THE DIAMOND MATCH CO.)

Compare our Prices. A trial Order will Convince You of the Superior Quality

One Story Complete Dovetailed Hives

With metal telescope cover, inner cover, reversible bottom Hoffman frames, nails, rabbets.

Standard size, crate of five, K. D. 8-frame	\$13.30
Standard size, crate of five, K. D. 10-frame	13.90
Jumbo size, crate of five, K. D. 10-frame	14.95

HIVE BODIES AND EXTRACTING SUPERS

Including frames, nails, rabbets.

Standard size, crate of five, K. D. 8-frame	\$5.45
Standard size, crate of five, K. D. 10-frame	6.15
Jumbo size, crate of five, K. D. 10-frame	7.20
Shallow, crate of five, K. D. 8-frame	4.10
Shallow, crate of five, K. D. 10-frame	4.45

COMB HONEY SUPERS

No. 1 Style.

For $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{8}$ beeway sections, including section holders, separators, springs, tins and nails.

Crate of five, K. D. 8-frame	\$3.95
Crate of five, K. D. 10-frame	4.30

HOFFMAN FRAMES

Standard size (corner cut top bar)	100, \$5.45	500, \$26.25
Shallow (corner cut top bar)	100, 5.25	500, 25.20
Jumbo (corner cut top bar)	100, 6.10	500, 29.40

DIAMOND BRAND FOUNDATION

SPECIAL

Medium, 5 lbs., 65c lb.; 50 lbs. 60c lb. Thin super, 5 lbs. 70c lb.; 50 lbs. 65c lb.

PRICES

SPECIAL

PRICES

HOFFMAN & HAUCK, Inc., Woodhaven, N. Y.

SEASON 1923

Western Bee Farms Apiaries MONTEREY, CAL.

Office No. 485 Sixth St., San Francisco, Cal.

Will be ready to ship March 15th.

PRICES—QUEENS Three-banded Italians.

1—Mated, untested	\$1.00
6—Mated, untested	5.50
12 to 25 at 85c; 25 to 100 at 75c.	

PACKAGE BEES

In two-pound packages only.

One to ten at \$3.25; ten to one hundred at \$3.00.	
One package, with queen	\$3.85
Large orders for queens or packages will be given a special quotation.	

TERMS:

Ten per cent with order, balance before shipment.



BEE SUPPLIES

The Very Best Quality.

Prompt Service

Order now and make sure of having your supplies ready on time. If you are looking for Quality and Service, try us. Send your orders, large or small. Prompt shipments by mail, express or freight. We manufacture and carry in stock a complete line of supplies for the beekeeper.

Write for our 1923 Catalogue.

AUGUST LOTZ COMPANY, Boyd, Wisconsin

BEES Bred for Honey Gathering QUEENS

My bees are Moore-Howe strain, bred from select mothers chosen from my 1,000 colonies with special reference to honey-gathering, white capping, uniformity of color and gentleness.

First premiums for the last five years at fairs in my section on queens and nuclei.

Prices for April and May:

3-frame nucleus with untested Italian queen	\$5.00
1 untested queen, \$1, 25 or more, 90c each.	
Tested queens, \$1.50 each; 25 or more, \$1.40 each.	

I guarantee a square deal.

JOHN W. CASH, Bogart, Ga.

QUEENS-OVER 10,000-QUEENS

Reared by our breeder. Who bought them? Beekeepers who wanted a good strain of honey gathering 3 banded Italian bees. Give our queens a trial and be convinced. Everything guaranteed free from disease and to please our customers. Delivery starts April 1. Orders booked now at our reduced price.

Untested.

1 queen	\$ 1.00
12 queens	10.00
100 queens	75.00
1000 queens	700.00

Tested

1 queen	\$ 1.50
12 queens	17.00

Good breeders, \$5.00 each.

Write for prices on bees.

THE CITRONELLE APIARIES
CITRONELLE, ALA.

INDIANOLA APIARY COMPANY

Italian Bees and Queens, bright golden and 3-banded. Orders booked for season of 1923 as follows:

1-lb. pkg bees with unt. queens	\$3
2-lb. pkg. bees with unt. queens	\$5
3-lb. pkg. bees with unt. queens	\$6

Ten per cent discount on orders of \$25 or more.

Untested queens	\$1.00 each
Tested queens	\$1.50 each

Thirty years' experience, hundreds of satisfied customers. Your orders solicited. Satisfaction guaranteed.

J. W. SHERMAN, Valdosta, Ga.

Co-operation

The January 6th number of the Kansas City Packer contains a very interesting article concerning co-operation on the part of the California citrus industry. This is reported an entire success.

In the article is contained an address by Mr. C. P. Earley an independent shipper, who compliments the Citrous Association, but also suggests that the independent shippers' competition will always be desirable inasmuch as it will not only furnish sufficient competition to make the best endeavor on the part of the co-operators, but will also allow an opportunity of the members of the Co-operative Association to see just what their co-operation is accomplishing for them.

A Full Page Feature on Bees

The January 25, 1923, issue of Modern Farming, published in New Orleans, La., carries a full page front feature entitled "Proper Management Essential to Beekeeping Profits."

This article is written by C. M. Elfer, a prominent Louisiana beekeeper, and should attract considerable attention from the readers of that magazine.

Langstroth Hive Standard

At the standardization conference

convened by the Apis Club in London on December 2, it was decided by nearly three-fold majority to adopt Langstroth equipment as an international standard.

Tennessee President Dies

A news clipping reports the death of Mr. Geo. L. Mathews, of Franklin, Tenn., age 76, President of the Tennessee Beekeepers' Association, who dropped dead at the first day's meeting of the Association at Nashville, after delivering his address to this organization. The death was caused by heart trouble.

Soy Bean for Honey

With reference to the article on soy bean for honey, it is what I would call a good yielder. I secured 51½ pounds per colony from 20 colonies from this source. There are about 160 acres of the crop within reach of my bees and the neighbors have about 50 colonies of bees in my range. I do not see much difference between the yields on heavy or light soils. The bees work on soy beans from morning till night, although not so heavily toward noon. The bloom was cut short by dry, hot winds. I have never seen a bee on the plant when grown in cornfields.

More About a Live Organization

Vigo County has been frequently mentioned in these pages as having a model beekeepers' association. During a recent trip it was discovered why they have been so successful. It did not take much acumen to get at the reason, after meeting the President and Secretary and seeing them in action. They are 100 per cent alive from the word go to the finish. No association can be wholly successful without officers of this sort.

They have an interesting work in their Benevolent Department, which looks fully after the beekeeping interests of members of the society who are sick, and aids the families of departed members in disposing of their bees and equipment. This seems worth while.

Another Book by Alfonsus

With the closing of the old year came a 60-page paper-bound book in German entitled "Bienenwirtschaft" and written by Alois Alfonsus, editor of the "Bienenwatter" at Vienna.

This is a beginners' book in beekeeping, belonging to a series treating of different agricultural subjects.

The book has few illustrations, but the subject matter is treated in a manner characteristic of the ability of Mr. Alfonsus.

NUCLEI — 1923 April and May Delivery

We are prepared to book orders for April and May, three-frame nuclei with tested or untested queens. Our capacity, after 15th of April will be 1,000 nuclei—a few before that date.

We are located less than two and one-half days from New York and Chicago by direct express shipment.

Our apiaries are located on the Florida Keys, five miles from the mainland, in disease-free territory, and nothing but brand new bee supplies and equipment are allowed to come from the outside into our apiaries. We do not want you to return the shipping cages.

Prices:

Two-frame nuclei, without queen	\$4.25	Untested queens	\$1.00 additional
Three-frame nuclei, without queen	5.25	Tested queens	2.00 additional

Discounts on quantity orders

Guarantee: We guarantee safe arrival and will replace losses or refund money on express delivery receipt signed in full by the Express Agent showing the apparent damage done in transit.

C. E. BARTHOLOMEW, Manager.

HUGH M. MATHESON'S APIARIES, 418 S. W. 2nd Ave., Miami, Florida

NUCLEI, PACKAGE BEES and BRIGHT 3 BAND QUEENS

HARDY ITALIAN BEES and QUEENS, reared from the FINEST BREEDING STOCK, by methods and care such as give them qualities of their mothers. Read this from a veteran beekeeper who tried them: Mr. Ulis Blalock.

"Dear Friend: The season just closed has been very bad; no honey to speak of. The queens I bought of you are a fine lot, all extra good, and the largest and most prolific I ever saw, and every one purely mated. You get all my future orders. I got a square deal."

This is the kind of satisfaction I give and guarantee.

Prices: Packages, with queen, 1 lb., \$2.75; 2 lbs., \$4.00; 3 lbs., \$5.25. Nuclei, with queen, same price, 1, 2 and 3 frames, respectively. Queens, \$1.25 each. NO BETTER can be bought. There is no disease near here. I GUARANTEE safe arrival and complete satisfaction. Free booklet describes stock and methods. Write for it.

ULIS BLALOCK, Christine, Texas

If You Haven't Seen it You Should Send a Postal Card for a Free Sample Copy of

YORK'S BEES and HONEY

Edited by George W. York, 906 W. First Ave., Spokane, Wash.

OR, BETTER YET, SEND 50 CENTS

if you are a new subscriber, and get all the balance of 1923. It is a monthly, at \$1.00 a year, but this special 60c offer is an introductory price which should be accepted by thousands of beekeepers all over America. It is by many considered the best bee paper issued west of the Mississippi River. It is worth dollars to a real beekeeper.

Reduction in Prices on Three-Banded Italian Queens and Package Bees. I will pay Transportation Charges Same as Last Season.

Can now send 2-lb. packages (6 pounds gross) through to Canada via parcel post.

Prices, prepaid to buyer's address, either via express or parcel post. Effective, also, with orders already booked:

1-lb. package, including young queen	\$3.25
2-lb. package, including young queen	5.25
10 or more packages, either size, 25c per package less.	
1 select (one grade) untested queen	1.00
10 or more untested queens, each	.90
Tested queens, each	2.00

Should you find a queenless colony, send to me for young queen to save them. I will not disappoint you.

Safe arrival of bees and queen, pure mating, and a perfect queen guaranteed. Furthermore, I will make good my guarantee. Ten per cent cash required to book order, balance just before shipping. I have the bees, men and equipment to ship on the day you name. No disease.

JASPER KNIGHT, Hayneville, Ala.

GENUINE GERMAN MAUSER

Latest model 9 shot automatic. Shoots standard cartridges—lies flat in pocket—World's famous Luger 30 cal. \$20.75—Hand Ejector Revolver, swing out cylinder 32 cal. \$16.95. 38 cal. \$17.95. All brand new latest models. Guaranteed genuine imported.

Pay on Delivery SEND NO MONEY

Satisfaction guaranteed or money promptly refunded.

\$6.95

25 cal. Pocket Automatic; 25 cal. Blue Steel Army Automatic \$8.45; 32 cal. \$10.45; Officer's Automatic, 3 safeties, 25 cal. \$11.95; Military Trench Automatic, 32 cal. 19 shot extra magazine FREE, \$11.95. Just now you need over there. Imported Top Break Revolver over there. 32 cal. \$2.95.

Universal Sales Co. 165 B'way, Desk 325 New York

QUEENS

Three-banded Italians, one strain only. Cells built in extra strong colonies and mated in 2-frame nuclei. Mating yard 6 miles from city. No black bees or disease in neighborhood. Twenty years' experience. No cheap help. Satisfaction guaranteed.

One queen, \$1; 6, \$5; 12, \$10.

L. E. ALTWEIN
1206 N. 13th St.
ST. JOSEPH, MO.

We think our 1923 prices on package bees, nuclei and queens reasonable. We quote a 2-lb. package with select untested Italian queen in lots of 25 or more at \$4.00. Other sizes in proportion, and for a quantity discount to apply.

We also want to quote you on your queen requirements. Write for circular and prices. We want to tell you about our bees.

R. V. STEARNS, Brady, Texas

12 Months to Pay

Earn money for the small payments. Parents often advance first payment to help buy a RANGER. 44 styles, colors and sizes. Factory to Rider prices. Delivered FREE, express prepaid, for 30 DAYS TRIAL. Terms to suit—cash or easy payments. Handle, wheels, and equipment Tires at half retail prices.

SEND NO MONEY. Write today for big Free Ranger Catalog and marvelous prices.

Mead Cycle Company Write to us today
Dept M Chicago 337



The Miller Memorial

During the Indiana short course the beekeepers present took up a collection for the Miller Memorial Fund. The total collection was \$25.

The donors included: Mason J. Niblack, H. Schuessler, J. C. Larsen, E. Metzger, Mrs. W. H. Lehman, Mrs. Mae W. McClain, Miss S. Sonnfeld, A. Wisler, H. J. Schafer, Edw. Magnuson, Geo. J. Schnurlein, T. C. Johnson, D. G. Borton, C. A. Rush, Lambert F. Horn, C. F. Weigle, Ivan Meister, Reynolds Metz, Russell Wiley, Wilbur Clawson, E. H. Lenning, Geo. S. Demuth, Andrew C. Welling, Occurs Tonnes, Benj. H. Wilkins, J. J. Davis, W. A. Price.

Vigo County Donation

The amount of \$36.20 was received from the Vigo County, Indiana beekeepers. The following members subscribed:

W. E. Cordes, G. A. Harris, Max Mapes, Chas. Kruse, Lorne Adams, W. A. Payne, J. F. Murphy, James Whipp, Chas. B. Saunders, G. L. Wright, J. W. Davis, Mrs. Geo. W. Pennington, Carl E. Killion, G. M. Richardson, W. R. Richardson, W. H. Dugan, J. C. Beckwith, J. M. Mace, Frank Teel, Thomas F. Jones, Wm. R. Bergeman, F. F. Pomeroy, F. W. Mooney, V. N. Asbery, Charles Jackson, C. L. Richardson, Jesse Harpold, B. V. Hoover, E. P. Coultrin, L. E. Gaskins, John F. Yeager, Geo. Reiss, R. B. Davis, Wm. Hunter, J. P. Piker, Wm. F. Ulbrich, Geo. E. Osburn, A. H. Reupke.

Donations Received by H. F. Wilson

G. M. Ranum, (Wis.)	\$ 3.00
J. M. Barr (Wis.)	1.00
Rock County Beekeepers' Association (Wis.)	5.00
Milwaukee County Beekeepers' Association (Wis.)	5.00
Richland County Beekeepers' Association (Wis.)	2.00
Baraboo Valley Beekeepers' Association (Wis.)	5.00
Conrad Kruse (Wis.)	5.00
Northeastern Beekeepers' Association (Wis.)	5.00
Sheboygan County Beekeepers' Association (Wis.)	5.00
Washington County Beekeepers' Association (Wis.)	5.00
A. H. Seefeldt (Wis.)	1.00
Rhode Island Society of Beekeepers	35.00
Funds from A. I. Root Co.	452.95
Roy Littlefield, Exira, Iowa	3.00
Mrs. Johanna Heurkens, New Franklin, Wis.	1.00
Price County Beekeepers' Association (Wis.)	2.50
E. C. Ratlee	1.00
South Dakota Beekeepers' Association	10.00
L. W. Parman (Wis.)	1.00
Shawano Beekeepers' Association (Wis.)	5.00
Marathon County Beekeepers' Association (Wis.)	3.00
Indiana Beekeepers' Ass'n	25.00
Harry Lathrop (Wis.)	5.00
Naomi Pinard	2.00
Dane County Beekeepers' Association (Wis.)	25.00
Fond Du Lac Co.	5.00

Local Advertising

It is interesting to note that many producers of national products have found that the best method of advertising is to concentrate in a campaign covering a limited area. Frequently a large city is selected and advertising placed in all the newspapers, in store windows, upon billboards, and in car signs, until the locality is thoroughly soaked with that particular form of advertising. Some of the largest bottlers and distributors of honey also find that this is the best way they can dispose of their products.

It is doubtful, with our present organization, that we can get anywhere with spasmodic national advertising of honey. The greatest good in advertising will come through the efforts of individual producers who see the virtue of completely advertising their product in their immediate vicinity. The greatest need of honey producers is a standard to which they can all subscribe. If honey were marketed at a relatively uniform price in some standard manner, local advertising would soon dispose of the crop which we are now able to obtain.

What the Wisconsin Association has Accomplished

Malitta D. Fischer, Secretary of the Wisconsin State Beekeepers' Association has exhibited a sheet to Wisconsin beekeepers in which she gives a few of the accomplishments of the Association during the past year, as follows:

1. Wisconsin Bee Inspection Law (increased appropriation in 1921).
2. Honey Grading Rules and Regulations.
3. Service of Crop Reporting Department.
4. Increase in premiums for bee and honey exhibits at State Fair.
5. Special five weeks Beekeepers' Short Course.
6. Wisconsin Beekeepers' Summer Field Meet and Chautauqua.
7. Securing of Miller Memorial Library for University of Wisconsin.
8. Deferring cutting of sweet clover until after blossoming period.
9. A monthly beekeeping publication for all members.
10. Forty-four associations, 35 of which are affiliated with the State Association.

Some of the things this Association expects to accomplish during the coming year are as follows:

1. Bring about a proper means of distribution of honey in Wisconsin.
2. Stabilize and strengthen the honey market in Wisconsin.
3. Provide uniform Containers with State Association label.
4. Establish appropriation to promote welfare of the State Association, enabling the issuing of an annual report, special exhibits, etc.

The Wisconsin Association now has already 800 members and certainly deserves to grow in view of the efforts being made in that state for the advancement of the beekeeping fraternity.

Maryland's Co-operative Association Law

Bulletin 26, from the Extension Service of the University of Maryland, College Park, Maryland, outlines a new co-operative association law for the state which legalizes the right of producers to bargain collectively for the sale of products and for the purchase of supplies. It provides for the incorporation of co-operative associations of "any number of adult persons, not less than five, at least two of whom are residents of the state, and engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, beekeepers, nut or fruit growers, with or without capital stock, for the purpose of collectively producing, processing, preparing for market, handling, storing and marketing, in interstate and foreign commerce, such products of persons so engaged, or of acting as the selling or buying agent or both for the members."

The Association cannot pay dividends on stock or membership capital in excess of 8 per cent per annum and no member is entitled to more than one vote because of the amount of his stock.

The products of non-members cannot be handled by the Association in amounts greater than handled by it for members. All proceeds, however, in excess of deductions and expenses, are to be distributed to the members in proportion to the volume of business transacted by said members with the Association.

This is an important development and it is of interest to follow what the producers of Maryland will do with the opportunities the law provides. Those interested in the law in full and the explanations of its provisions should send for the Bulletin.

New Yorkers Meet

The annual meeting of the Federation was held at the Joseph Slocum College of Agriculture, December 12, 3 and 14.

The Moses Quinby banquet on Wednesday evening was just one feast of good things to eat, toasts and good music, under the able direction of the toastmaster, Charles Stewart. During the banquet Mr. C. B. White, of the Department of Farms and Markets, delivered a very valuable address on co-operative marketing of honey and apiary products.

The following officers were elected for the ensuing year: President, Geo. B. Howe, Sackets Harbor, N. Y.; Vice President, Leon E. Hall, Tribes Hill, N. Y.; Secretary-Treasurer, R. B. Wilson, Ithaca, N. Y.

Following the meeting of the Federation, the meeting of the Marketing Association was held, with the result that many contracts with the beekeepers.

Honey in the Local Newspapers

A set of 25 articles on honey, specially prepared for distribution by the beekeeper to local papers to stimulate the demand for honey. These articles deal with interesting phases of beekeeping which will interest the ordinary reader and help make a buyer of him.

We offer the whole set of 25 articles at a postpaid price of only 50 cents, or in lots of ten or more sets at 35 cents each, postpaid.

A real opportunity to have your local people get interested in honey and its production and use.

Order a set today.

AMERICAN BEE JOURNAL
Hamilton, Ill.

Dixie Beekeeper

The 45th edition of this 32-page paper is now out and a sample copy is ready for you, for the asking. All about beekeeping in Dixie.

FLORIDA BEES AND QUEENS

This hardy and prolific stock of 3-band Italian bees has been reproducing itself for more than thirty years in the sand hills of central Florida. Three-frame nuclei with queen, \$6.00. Tested queens, \$1.50 each. Untested queens, \$1.00.

WILDER'S CYPRESS HIVES

Will give you satisfaction in point of service and prices to suit you.

Write for price list and catalog.

J. J. WILDER
Waycross, Ga.

PORTER

**BEE
ESCAPE
SAVES
HONEY
TIME
MONEY**

For Sale by all dealers

If no dealer, write factory

R. & E. C. PORTER, MFRS.
Lewistown, Ill., U. S. A.

(Please mention Am. Bee Journal when writing)

Mack's Three Band Italians

Represents the highest standard to which queens have thus far advanced. They are guaranteed to please you or money back.

Untested		
1 to 49	50 to 99	100 up
\$1.00 each	95c each	90c each

For prices on other grades, and bees by the pound, send for our catalog. A postal will bring it.

HERMAN McCONNELL
Robinson, Illinois.



Needed by Every Beekeeper Good Queens In Every Queen and Package



There is a guarantee of satisfaction that you have a right to expect
BUY FOREHAND'S 3-BANDS, YOUNG AND HUSKY

The three vital needs of successful honey production are, GOOD QUEENS, GOOD MANAGEMENT and GOOD LOCATION. You furnish one, Nature one and I furnish the other. But you must be the judge of all. You don't want a location in a desert, neither do you want poor queens. You have the same right to choose and reject queens as you have to choose your location. My guarantee allows you this.

Your dollar's worth or your dollar back. Order now and get your bees and queens when you want them. Ten per cent is all that is required with order.

	1-4	5-11	12-24		1	25 and up
Untested	\$1.25	\$1.20	\$1.15	One pound pure Italian bees with young queen....	\$3.00	\$2.90
Select untested	1.50	1.45	1.40	Two pounds pure Italian bees with young queen....	5.00	4.75
Tested	2.50	2.45	2.40	Three pounds pure Italian bees with young queen....	6.50	6.25
Select tested	4.00	3.95	3.50			

All bees and queens guaranteed to reach you in good condition in the United States and Canada.

N. FOREHAND, RAMER, ALABAMA

QUEENS

NORDAN'S THREE-BANDED ITALIAN QUEENS (Three-banded only).

Have won World-wide Fame.

They are guaranteed to be absolutely immune to Bee Paralysis. I am booking orders now for spring delivery.

Prices on Queens and Packages.

Select untested queens, 1 to 50 -----\$1.00 Select tested queens, 1 to 50 -----\$1.50

Packages:

One-pound packages, with select untested queen, 1 to 50 -----\$2.50

Two-pound packages, with select untested Queen, 1 to 50 -----\$4.00

Can make shipments when you want them, either queens or packages. I will appreciate your orders, large or small.

References: Alabama Bank and Trust Co., Montgomery, Ala.

M. S. NORDAN, MATHEWS, ALA.

MONEY SAVED

BEE SUPPLIES

TIME SAVED

Roots goods at factory prices with WEBER'S Service

Send us a list of your wants and we will quote prices that will save
you money

C. H. W. WEBER & CO., 2163-65-67 Central Ave., Cincinnati, O.

QUEENS—PACKAGE BEES THREE-BANDED ITALIANS

Place your order with us and receive the reward from our reliable stock. They are wonderful workers and our customers are getting splendid results from them in every respect. Read what others say about them:

"The 18 queens bought from you were all introduced in colonies that were badly affected with European foulbrood, and they cleaned up and Italianized 100 per cent, and I am more than pleased with the results. I will want some more of your package bees and queens next spring."—Iowa.

"I have bought package bees from you; they are wonderful workers and are admired by the local beekeepers for their beauty and gentleness."—N. Y.

In comparing our prices with others remember we pay all transportation charges.

1-lb. packages with unt. queens -----\$3.25 each. 2-lb. packages with unt. queens -----\$5.25 each.
1½-lb. packages with unt. queens -----\$4.25 each 3-lb. packages with unt. queens -----\$6.25 each.

25c less per package on shipments containing 12 packages or more; 50c less per package on shipments containing 25 packages or more.

Sel. unt. queens, \$1.00 each; Sel. test., \$2.00 each We guarantee pure mating, safe arrival and entire satisfaction.

HAYNEVILLE APIARY CO. HAYNEVILLE, ALABAMA

NUCLEI**QUEENS****POUND PACKAGES**

One thousand packages or nuclei for April and May. Finest Italians. Select breeding. Highest quality, first, last and always. With the kind of service you will like. Result: satisfied customers and repeat orders.

"Book my order for 14 of your queens. The one-half dozen bought of you last year gave a good account of themselves."—Nevada, Mo.

"I received a 2-frame nucleus from you May 1st; now, May 25th., they have 10 frames full of brood and I have given them another brood-chamber. They are away ahead of 3-frame nuclei purchased in Mississippi at the same time."—Knoxville, Ill.

2,200 pounds surplus is what a La Porte, Ind., man got from 10 colonies headed by our queens.

"Please send me 15 2-frame nuclei about May 1st; the 10 I bought of you last year did fine."—Uby, Mich.

Queens: Untested, 75c each, \$70 per 100. Select untested, \$1 each, \$90 per 100. Tested, \$1.25 each. Breeders, \$5 and \$7.50. Packages: 2 lbs. Italian bees and untested Italian queen, \$4.50; 25 or more pkgs., \$4 each; 3 lbs. Italian bees and untested

Italian queen, \$5.50; 25 or more pkgs., \$5 each.

Nuclei: 2-frame, with untested or young tested queen, \$5.00; 25 or more, \$4.50 each; 3-frame, with untested or young tested queen, \$6.50; 25 or more nuclei, \$6 each.

Health certificate with each shipment. Safe arrival and reasonable satisfaction guaranteed. Terms 20 per cent to book; balance prior to shipment.

JENSEN'S APIARIES, CRAWFORD, MISS.**Pound Packages Nuclei and Queens**

Shipping begins March 15, and continues through the spring and summer. Capacity, 4,000 packages or nuclei. Safe delivery guaranteed within the United States and Canada. No disease. We breed from the best strains of three-band, leather colored and golden Italians that money can buy, and there is none better. Descriptive circular free. Ten per cent books order.

Two-pound package of Italian bees or two-frame nucleus, with young Italian queen, \$4.00 each; 10 or more \$3.75 each.

Three-pound package of Italian bees or three-frame nucleus, with young Italian queen, \$4.75 each; 10 or more, \$4.25 each.

Two-pound package of hybrid bees or two-frame nucleus, with young Italian queen, \$3.75 each; 10 or more, \$3.50 each.

Three-pound package of hybrid bees or three-frame nucleus, with young Italian queen, \$4.25 each; 10 or more, \$4.00 each.

One-frame nucleus, one pound extra Italian bees, with young Italian queen, \$3.50 each; 10 or more, \$3.25 each.

One-frame nucleus, one extra pound of hybrid bees, with young Italian queen, \$3.25 each; 10 or more, \$3.00 each.

A young untested Italian queen of the strain desired will be furnished free with any order listed above. The offer on hybrid bees is a material saving to the purchaser, as the queens are as purely mated Italian queens as can be had. I have only a limited amount of hybrids to offer.

BRAZOS VALLEY APIARIES, Gause, Texas

H. E. GRAHAM, Prop.

"IS IT GOOD BEEKEEPING?"

The following items not only have our own stamp of approval and our guarantee of satisfaction, but they are also approved by other practical beekeepers. Buy supplies which are past the experimental stage.

"SUPERIOR" Foundation—(Made by the famous Weed process from 100 per cent pure Western beeswax. It is unequaled for tensile strength where nothing but pure beeswax is used)

"SUPERIOR" Hoffman Frames—(Just what the name implies. A little better frame than hitherto offered).

"SUPERIOR" Bee Hives and Supers—(Accurately made from strictly clear, soft white pine).

"SUPERIOR" Wire and Cloth Veil—(Used exclusively for several years in our Utah, Idaho and California apiaries).

"SUPERIOR" Cylindrical Bristle Brush—(Made of light gray bristles bound in heavy wire. Will outlast a dozen of the ordinary kind).

Lewis "BEEWARE" Sections—(Noted for their fine quality wherever beekeeping is practiced).

Bingham and Root Smokers—(They sure smoke!)

Lewis-Markle and Root Extractors—(Recommended for the amateur as well as for the commercial beekeeper).

Metal Eyelets for Frames—(Inserted with a handy tool, and they stay "put").

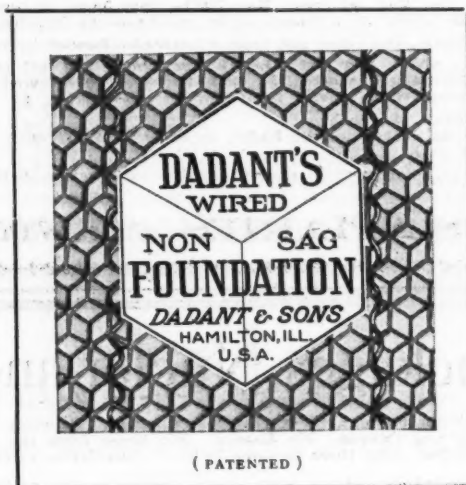
Leather Palm Bee Gloves—(Giving protection as well as wearing qualities).

SUPERIOR HONEY COMPANY, Ogden, Utah

"Everything in Beekeepers' Supplies"

Branches at Idaho Falls, Idaho, and Riverside, Calif.

WESTERN BEEKEEPERS: Don't forget that we save you FREIGHT!



Its Performance Makes Every User Enthusiastic

AN EFFICIENT PRODUCT ADVERTISES ITSELF

That Dadant's Wired Foundation is fulfilling its mission is evidenced by the many letters of praise received each day.

Ask its merits of any who have used it.

Try it yourself and be convinced

Dadant & Sons, Hamilton, Ill.

Makers of Dadant's Famous Foundations, both
wired and unwired

Results Come from its Good Points

1. It is reinforced with radiating shoulders of strength.
2. Makes non-sag all-worker comb.
3. Increases the brood area.
4. Reduces the labor and expense of hand wiring.
5. Increases the speed of assembly.
6. Reduces extracting damage.
7. Allows higher extracting speeds.

Wired Foundation and split-bottombar frames are sold by all distributors of "Lewis Beeware" and Dadant's Foundation. Send them your orders.

BEESWAX.—We need constantly large quantities of beeswax and will pay good prices for it. However, we cannot accept beeswax containing a portion of other waxes, since this results in adulteration and spoils the purity of our product. Pure beeswax may be shipped to us at Hamilton, Illinois, or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your station. As you wish.

Prospects in South Texas

Up to the present (Jan. 15), this has been the mildest winter in years. There has not been enough frost to kill the tender vegetation, and we are still eating tomatoes and string beans fresh from the garden. Oranges, lemons and other citrous fruit still hanging on the trees give quite a tropical effect for this country.

Bees are in fine condition, most colonies being heavy with honey and crowded with young fall-reared bees. Many colonies have started brood-rearing, and now pollen is coming in.

Unless we get a hard spell of weather, all colonies will have brood well along by the first of February.

Prospects for the coming season are very flattering at this time. Abundant rains in the fall brought up a fine stand of honey plants, and gave them a splendid start. All plants are taking advantage of the mild winter and getting well established. Of course, a late freeze would blight our hopes of a fine spring crop, but we always take a beekeeper's chance. If we lose out in the spring, we will bend every effort towards keeping the bees in condition to take the best advantage of the midsummer flow;

and if that fails to materialize, we will still look forward to the fall season, when we seldom fail to secure a fair crop. J. D. Yancey.

Disease in Arizona

According to newspaper reports, Mr. Don C. Mote, State Entomologist of Arizona, reports foulbrood in only five counties of that state. Of these the disease was eradicated in two counties by intensive inspection campaigns last year and clean-up campaigns have been started in two more.

THREE FRAME NUCLEI COMBLESS PACKAGES AND PURE ITALIAN QUEENS

My aim is Quality, Quantity, Quick Service. See what some of my customers say, and be convinced that I am sending out the very best stock that money can buy.

Having had 27 years' experience as a large honey producer, as well as queen rearing and the package trade, places me in a position to know the beekeepers' needs to gather a good honey crop.

I am located in the best section in the South. We have thirty trains every day carrying express and mail, which enables me to get all shipments off with dispatch.

I guarantee every shipment as represented, and when they arrive in bad condition, have your agent note same, send me your claim and I will settle same at once and save you the trouble of trying to collect from the express company. This alone is an item worth considering.

My nuclei have enough bees to cover all three frames, therefore there is no need of an extra pound of bees, as they would do more harm than good, as bees must have plenty of ventilation while in transit.

A. B. Marchant, Jesup, Ga.

Dear Sir: In regard to the 50 nuclei I purchased from you last spring, they are world beaters; some of them made me over 200 pounds of comb honey. Would like to have 1,000 more.

Frank Snyder, Anamosa, Iowa.

Dear Sir: Bees arrived in A No. 1 condition and I write to thank you. They are a nice lot.

C. S. Pickford, Halifax, N. S. Canada.

Dear Sir: The 20 three-frame nuclei you sent me averaged 150 pounds of comb honey, with 30 per cent increase. Slogan ought to be "Use more of Marchant's bees and harvest bigger crops."

Merritt Oplinger, Walkerton, Ind.

Dear Sir: The nuclei arrived in almost perfect condition.—W. J. Abernathy, Beeton, Ont., Canada.

Dear Sir: Received last shipment today; arrived in good condition; the other shipment in fine shape; am well pleased with them.

C. E. Jacox, Lander, Wyo.

Dear Sir: Received the 12 crates of bees with hardly a handful of dead ones in the lot. They are certainly a fine, fine lot. I will place my orders with you next year.

Wilbur Swayze, Dunville, Ont., Canada.

Dear Sir: Received the bees April 22nd, in fine condition. They are certainly a fine lot of bees and the queens are dandy. You will receive the next of my orders.

Roy H. Stitt, Illion, N. Y.

1923 prices of 3-frame nuclei with a select untested queen: 1 to 5, \$5 each; 6 to 12, \$4.90 each. Two-pound packages with queen: 1 to 5, \$4.50 each; 6 to 12, \$4.25 each. Write for prices on larger lots, also on 3-pound packages.

Prices of queens after May 15, single, \$1.25, 6 for \$5.50 12 for \$10; 50 at 70c each; 100 at 60c each.

A. B. MARCHANT, JESUP, GEORGIA

REFERENCE: Brunswick Bank & Trust Co., Jesup, Ga.

BARNES' FOOT POWER MACHINERY

Read what J. E. Parent of Chariton, N. Y., says:

"We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work."



W. F. & JOHN BARNES CO.,
995 Ruby St., Rockford, Ill.

WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 1923 price list. Our quotations will interest you. The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

BEEES IN PACKAGES

Vigorous Italian queens and bees in packages and nuclei; pure 3-banded stock; standard nuclei that fit Root Standard hives. My 3-frame nuclei are superior to 3-pound combless packages. Bees positively healthy. Queens are thoroughbreds, and are young and laying. Safe arrival or replacement.

3-lb. package with queen 1 to 20, \$5.25; 25 or more, \$4.90.

3-fr. nucleus with queen, 1 to 20, \$5.25; 25 or more, \$4.90.

TERMS: Cash with order. State name of express station.

C. M. ELFER, St. Rose, Louisiana

 49 YEARS FOR PROGRESS IN BEEKEEPING — No. 4

ACCURACY in Lewis Beeware

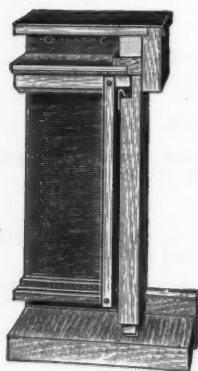
EIGHTY-EIGHT Inspections in process guarantee the absolute **ACCURACY** of Lewis goods. "Beeware" not only looks pretty—it works "pretty."

Every experienced beekeeper knows what *Accuracy* in his hives and frames is worth. He knows, or soon discovers, that if the bee spaces are too large or too small the bees fill them up with brace combs. This wastes beeswax and time, tends to crush the bees in handling, makes movable parts stick, causes loss of honey, encourages robbing and promotes swarming.

The Lewis policy of **ACCURACY** assures you hives and hive parts that are readily interchangeable, easily handled, and entirely satisfactory in use. They make the most of the space, of the labor employed and the capacity of the swarm.

Because **ACCURACY** in equipment is so essential to profitable beekeeping, we have always enforced policies that absolutely assure it. Our grade of white pine is pronounced by the U. S. Forest Products Laboratory to be the practical equal of any grade of pine now being used in bee supplies. Eighty-eight inspections from the planer to the shipping room insure the scientific correctness of all measurements of hives, supers, frames and other wooden parts. This **Accuracy, Quality and Workmanship** we absolutely guarantee. Whenever you see our trademark, you may expect your hives to assemble easily, take the paint easily and afford a higher re-sale value.

Come in to our Watertown factory at any time and watch our inspection methods for yourself. When offered cheaper bee supplies, you will then be quick to consider whether in the long run their inconvenience will not be an expensive experiment as compared with Lewis Beeware. Accuracy of goods and reliability of management are among the reasons why a majority of all careful, practical beekeepers in the United States use Lewis Beeware.



Having first worked out the best possible spacing for every part, as indicated by the cross section of our standard hive shown above, we make sure of this accuracy by steel gauge inspection. In each ten-frame hive there are 88 inspections from the time the lumber arrives to the time it receives the "Beeware" stamp which guarantees its accuracy of workmanship.



LEWIS BEEWARE

G. B. LEWIS COMPANY

Home Office and Works—Watertown, Wisconsin, U. S. A.

BRANCHES—ALBANY, N. Y. LYNCHBURG, VA. MEMPHIS, TENN. WICHITA, KAN.
OVER 200 DEALERS THROUGHOUT NORTH AMERICA



VOL. LXIII—NO. 4

HAMILTON, ILL., APRIL, 1923

MONTHLY, \$1.50 A YEAR

BEEKEEPING IN HAITI AND THE DOMINICAN REPUBLIC

By E. L. Sechrist

Assistant in Beekeeping, Bureau of Entomology.

DURING two years while I managed about 1,600 colonies of bees in the two republics, Haiti and the Dominican Republic, both on the island of Haiti, the situation was favorable for adding to my earlier experience in tropical beekeeping. Having had previous training in the work, both in the white clover regions and in California, the opportunity was good to compare the essentials of beekeeping in the tropics and in temperate regions.

The apiaries in our "string" were unnecessarily scattered, being situ-

ated along a route about 200 miles in length, extending from the semi-arid region around Monte Cristi on the north coast of the Dominican Republic, southward into the rich valley which Columbus named the "Royal Plain," where the climate is moist and the vegetation agrees with the northern man's idea of the tropics, then westward to Cape Haitien, which is also on the northern coast of the island, but in the Republic of Haiti on the same harbor in which one of the three ships of Columbus went on the rocks and was lost.

Besides the interesting phases of beekeeping there was great interest for me in the historical side of the country. One could see the site of the old fort which Columbus built from the wreck of his vessel when he left some of his men and returned to Spain for a new start; could see the ruins of Fort Isabella, now abandoned, a city which Columbus founded. Prisons and castles on the south of the island which were built at that time are still in use and the tree still stands to which Columbus tied his little vessel when at one of the ports. A church still stands which he caused to be built where he had a notable victory over the Indians and I saw the tree from which he made the cross that he erected to mark the spot. The tree fell in 1919. Now the Indians are all gone and the population of the island consists of two sorts of people, the French and Creole-speaking negroes of Haiti, and the brown, Spanish speaking people, ranging from pure white to black, on the Dominican side of the border.

Sitting beside a glowing fire some wintry night, reading a bee journal, thinking of his bees out in the cold and snow or shut up in a cellar, it is easy to imagine the beeman dropping off into a dreamy sleep full of fascinating visions of a smoothly-gliding vessel sailing over purple seas and carrying him to the fragrant tropical paradise of his imagination. Awaiting his landing there is a swift automobile ready to whirl him away, followed by a fleet of trucks carrying loads of equipment, bee supplies, and the finest queens, to the locations of his new apiaries under the palms and bananas. (Palms and ba-



A West Indian seaport town such as this is where the beekeeper will have his warehouses and make headquarters.

nanas are always supposed to grow everywhere in the tropics).

Perhaps, though, the commercial honey producer of the North, tired of flocks of trucks and rushing autos and of the terrors of getting supplies and men to the place where they are needed at the time they must be there, dreams of walking quietly alone, along some shady woodland path, up a trail beside some rippling brook, to a level place on some mountain-side where there is a palm-thatched cottage, a small, well-kept apiary beside it, and a distant view of the sea. There he may sit on a wide veranda, listening to the far-off murmur of waves on the reef and to the hum of bees nearby while he meditates on problems which he has never before had time to work out because he always had so many bees that insisted on making carloads of honey for him to sell.

But all is not gold that glitters, and on arrival in Santo Domingo, one finds that the best honey-producing regions are in the semi-arid districts of the north and south sides of the island. These districts are similar to the southwest of our own United States. One of the best nectar-giving trees is the cambron, which is similar to the mesquite and identical with the algarroba of Hawaii. Some of the country is almost desert or is covered with tall grass, thorny shrubs and cacti of many kinds from little button-balls to trees 20 feet tall. There are forests of campeche (logwood) covering many acres, in the moister lands, and this is the most productive source of fine honey in Haiti and Santo Domingo.

A number of other trees furnish nectar, while some comes from the bellflower or Christmas vine (*Campanilla blanca*), which gives so much of Cuba's finest honey.

A hundred miles north of Monte Cristi, in the interior, around Santiago and La Vega, the country is entirely different in character, being moist and rich and producing luxuriant tropical vegetation, such as palms and bananas, avocados, mangos and other tropical fruits. Here it rains very frequently and, save for a few main highways, there are no passable roads during the rainy season. Near Santiago also lies Mocha, where such fine coffee is grown, and not far off are cacao (chocolate) plantations.

In the north part of the island it may not rain for six or eight months. Everything herbaceous dries up, leaves fall and trees are brown and bare, just as in our winter months until the rains come again. Not enough foodstuff can be grown in this section during the short rainy season to support the population, and much must be carried in, on donkeys, or on the heads of women, from more favored regions as much as a hundred miles away.

Black bees from Martinique were introduced later and the stock is now a mixture of the two races. Beekeeping soon became one of the main industries of the island, first under the French in Haiti and later in the remainder of the island. No bee disease has appeared. Bees were kept

in primitive fashion in open barrels or cylinders made from hollowed trunks of royal palm and other trees.

About 1905 the first successful modern apiary was established and beekeeping is now one of the standard minor industries. In those sections where honey is produced commercially for export, nearly all bees are kept in American standard frame hives, although many log barrels are still in use in the more remote and mountainous regions. Conditions are much less advanced than in Porto Rico, since good roads are only beginning to be constructed, and much of the transportation is still carried on over rough trails on the heads of natives, on the backs of donkeys or on two-wheeled ox carts.

Beekeeping in Haiti has some peculiar problems. The island is very mountainous and the climate and rainfall vary greatly within short distances on account of the elevation, nearness to the sea, prevailing winds and other factors. The annual rainfall may vary from 10 to 100 inches. A shift of location of ten miles may

make the difference between success and failure on account of greater or less rainfall.

Some good roads have been made by native labor under the direction of the Marines during the American occupation, but these merely connect the larger towns and the extensive beekeeper cannot have all his bees along the main roads. He must get off into the wild and uncultivated lands, since very few of the cultivated plants produce commercial quantities of nectar. Off the main roads there cannot be said to be any roads, merely trails which are passable in dry weather, but through which, in wet weather, no wheeled vehicle attempts to pass. Even parts of the main roads become impassable during the worst of the rainy season. It is work rather than pleasure when beekeeping necessities make it imperative to pass through such roads (through, not over). Fortunately, my Ford would often go through where heavier machines did not dare try it. Even so, we sometimes got in too deep, or



A newly located apiary in the forest in Haiti. Along the fence are planted cuttings of cactus, which will soon make a hedge sufficient to protect the apiary from cattle or thieves.

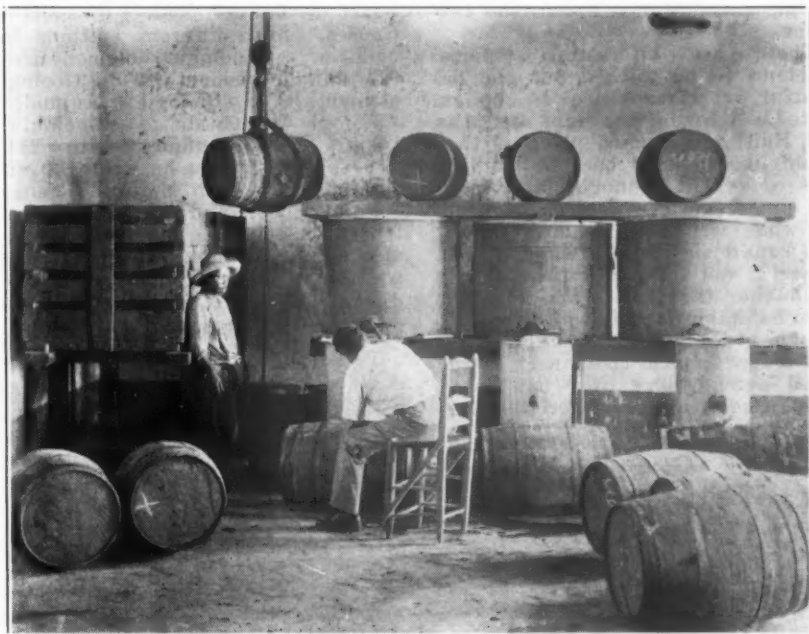
skidded off the road into a swamp alongside, or found mud and water too deep in fording some river. Fortunately, by making a little noise, one can usually attract ten or a score of country people who will soon push or carry the Ford to firmer ground. Moving bees, supplies and honey under such circumstances is not always a picnic, either. Honey is handled in five-gallon gasoline tins or in 32-gallon barrels, on ox or donkey carts, and sometimes it must remain at apiaries a month or more until rains

get caught, it is no matter. If a foreigner owns the apiary, it is well for him to be on hand during extracting, otherwise some undesirable things may happen. One common thing is for the crop not to be so large as expected; too many visitors, friends and relatives carry off honey for their own use. Even the hired apiarist has been known to have an ox cart handy, off in the woods, with a barrel of his own to be filled and hauled off to market the same night. Then, too, the strainer usually becomes clogged and

learn, also, the necessity of having well-bred queens instead of scrubs bred in small nuclei, as most apiarists do when they begin to make increase instead of allowing swarming.

The problem of keeping a good queen in each colony is perhaps the most difficult one that the beekeeper in Haiti must meet, while the next problem, closely associated with the first, is that of keeping the brood-chamber from being so filled with honey that the queen is prevented from laying her full quota of eggs. Temperature conditions are usually such that brood can develop anywhere in the hive, the bees do not keep a compact brood-nest and one may find a patch of brood on the outer face of the outside comb in a hive while several of the central ones may be full of sealed honey. An empty comb placed in a brood-nest is almost sure to be filled with honey before the queen lays in it and it is then seldom emptied for her use—she will find some cells elsewhere to lay in, if she can. Giving a frame or two of foundation at a time usually succeeds better, these being filled with eggs while being drawn out gradually. To provide adequate room for egg laying, it seems best, during most of the year, to confine the queen to one story of the hive, and then to keep all those brood combs as free from honey as possible. If any storing is permitted in the brood-chamber, it is almost impossible to keep sufficient empty cells for the queen. This condition also means that the queen must be prolific enough to fill completely with brood every cell in the brood-chamber that is not needed for pollen or for the temporary storage of nectar.

Great numbers of queens, 30 to 60 per cent yearly, are lost, with much consequent loss of colonies. Thousands of colonies starve during dearths through having been robbed of nearly all their honey, the owner hoping, just as California beekeepers used to, that their bees would gather enough honey, somehow, to live. If they did not, the bees just died, and



Storage plant used by the Hispaniola Honey Co., at Haiti. All honey is put into new barrels for shipment.

cease and the roads become smooth enough for carts to travel. This is one good reason for keeping bees in the arid portions—the roads are better. Also, in these regions there are fewer trees giving poor nectar. In the central parts of the island much honey might be produced, but most of it would be of poor quality, dark, and strong in flavor, while transportation to the coast is so expensive that no one can produce honey profitably except the native, whose living cost is small.

In some sections extracting is done at night, as "honey houses" are not built to keep out bees, but rather as airy dwelling places for the beekeeper and his family. Supers are taken off in the evening, piled up high, awaiting night and the rising of the moon. Neighbors come in and all have a general good time while the work is going on, as they are all fond of honey. The honey is poured into barrels as it comes from the extractor, sometimes with some attempt at straining. The straining does not, however, prevent an occasional log of wood or some good-sized stones from getting into the barrel, thus more barrels can be filled and they weigh up well. Sometimes a beekeeper can persuade a dealer to buy a barrel of honey without pouring it out and measuring it, but if he does

is thrown aside as useless. These difficulties can be overcome in time and the island of Haiti will become a great honey-producing country, when the people learn the necessity of producing clean honey and putting it into clean barrels instead of into salt pork or oil barrels. They must



A Dominican apiary in log gums. A second gum is placed against the end of the first to serve as a super. The bees fill both.

the beekeeper filled up his hives next season, if it was a good season. In one California apiary, once upon a time, out of 1200 colonies, all except 400 starved, but that did not worry the owner. So with the Haitian native. His expenses are small and if his bees bring him in some honey, well and good. If there is no honey, it was simply the result of a poor season, and he waits for a better.

The modern beekeeper who knows bee behavior and can, therefore, adapt his methods to conditions, need not fail from the causes just given, but there are conditions often present in Haiti which no one can foresee or prevent. There are vast logwood forests, often where transportation is difficult, extending for many miles—great seas of fragrant, feathery, yellow bloom. A single colony of bees has been known to store 700 pounds of logwood honey, white and deliciously fragrant. When logwood yields, no beekeeper could ask for anything nearer to a beekeeper's paradise; but sometimes unseasonable rains come, torrential tropical rains, destroying in a few hours the bloom of thousands of acres of bee pasturage. Then all hope of a crop is gone. Again, the logwood will be in bud, great bloom-clusters hanging somewhat like locust blossoms, awaiting the moist weather, without which they cannot open. The drought persists, for weeks, it may be, until the drooping buds wither and die. Meanwhile bees starve and rob, **rob ROB**. One dares not open a hive, even at dusk, at times, or the whole apiary will be in an uproar the next morning, seemingly with every bee trying to find out where that honey smell they got last night comes from.

During these dearths colonies become queenless, moths get into combs and the apiarist almost wishes he had never seen any bees or, if a native, he says, "never mind," lives on what fruits he can find, and starts out again next season with what he has left, hoping for better luck.

For the man who desires a good standard of living and who wants to make a specialty of bees, conditions are more difficult in the tropics than in the North, in spite of the fact that in the tropics bees live and thrive well in the wild state. There are a few beekeepers around each of the main ports who do well with bees in a moderate way, say 200 to 400 colonies. These men practically live with their bees, having their homes in the country, giving their bees fairly good care. Most beekeepers, however, except the country people in the hills who keep bees in hollow logs, live in the towns and only make periodical visits to their apiaries in the country where an ignorant laborer will be in charge, keeping down weeds and hiving swarms. Such apiaries are poorly managed, and it is beekeepers of this class that an American must put up with until he can train new men in his own methods.

What has been said about tropical beekeeping applies to the industry in Haiti and the Dominican Republic. In temperate regions the difference between the two seasons, so far as the

bees are concerned, is sharply defined; they pass quickly from the working season to one of entire quiet and cessation from all work, even that of brood-rearing, and from that condition in the winter, they pass at almost one bound into the full activity of spring work. Very little honey is obtained outside the four months, June to September. As we go south the seasons more and more shade into each other, the possible honey season commences earlier and continues later and many more kinds of flowers yield nectar. In the tropics these conditions reach the extreme.

There are interesting tropical problems to be worked out and delightful experiences are to be expected. A few of the right men may find Haiti just such a place as they would like to keep bees in, but the most of us will be much better satisfied to dream of tropical beekeeping while we produce honey in our own country. There are, of course, pioneers, and I look for these finally to conquer the tropics and to make them habitable for the white race, although, at the present time, there are only a few tropical spots, such as the Canal Zone, where life has been made attractive or safe for the average American.

dent of the same association. In addition to the books mentioned by us, in February, he produced the following works: "Les noms des fleurs trouves par la methode simple," a treatise to enable people that have no knowledge of botany to ascertain the name of any blooming plant; "Nouvelle Flore" with 2173 figures in the text; "Album de la nouvelle flore," with 2028 figures; "Petite Flore," with 898 figures; "Flore du nord de la France et de la Belgique," with 2282 figures; "Flore Complete portative," with 5338 figures; "La Foret de Fontainebleau"; "Lecons de Choses," four different editions for children; "Zoologie elementaire"; "Botanique elementaire"; "Geologie elementaire"; "Biologie Animale"; "Biologie Vegetale"; "Geologie"; "Cours de Botanique," with 2389 figures; in addition he wrote 30 different works upon Natural Sciences for the schools and colleges. In collaboration with A. Seignette, he was also author of some 30 other works, wall maps, etc., and a work on "Medicinal Plants, Honey Plants, Useful and Noxious Plants."

In addition to the "Cours Complet d'Apiculture," which he published with DeLayens, he revised the latter's book on the manufacture of



Gaston Bonnier.

PROFESSOR GASTON BONNIER

By C. P. Dadant

Prof. Gaston Bonnier died at Paris December 30, 1922. An announcement was made in our columns in February, page 67.

We will not repeat the statements made in the February number concerning this wonderful botanist and beekeeper, but we wish to add a few facts.

Bonnier was for years the active president of the Societe Centrale of French Beekeepers. At the time of his death, he was still honorary presi-

metheglin, under the title of "L'Hydromel & Sa Fabrication."

But this is not all. Bonnier was editor of the "Revue Generale de Botanique," a monthly, which is in its 34th year. All these works are published by the Librairie Generale de l'Enseignement, at 4 Rue Dante, Paris.

That our readers may have an additional idea of the worth of Bonnier, we will say that most of the dailies of Paris mentioned his death with long eulogies. Since he was professor of Botany at the Sorbonne, member of

the Academy of Sciences and of the Academy of Agriculture, former president of the Botanical Society of France, manager of the Biological Laboratory of Fontainebleau, in the heart of the forest of the same name, he is said to have been "the French savant whose name was the most popular of all." We thought him worthy of the place we give him in our columns.

It may be of interest to beekeepers to know that, in most of his

works on botany, he took the trouble to mark with a special sign, an asterisk, every plant which yields honey or pollen to bees. This should be a good suggestion to other writers on botany.

The first five volumes of his greatest work: "Flore Complete" contain over 1500 figures in colors, of the finest finish.

Bonnier was born in 1853, and was, therefore, nearly 70 years old.

THE PRACTICAL SIGNIFICANCE OF LIFE HISTORY

By Ralph L. Parker

The facts of life history are the basis of our knowledge of an insect and this article is an attempt to relate various steps in the life cycle of the honeybee to apitary practice.

Food

Without food, life would soon be extinct. So it might be said that life history centers around the food supply. When there is sufficient honey and pollen in the hive, brood rearing is carried on at all times during the open season. If, because of unfavorable climatic conditions, these foods are not obtainable in the field, but a supply is still within the hive, reproduction and growth continue. On the other hand, if stores in the hive are exhausted and field conditions prevent the gathering of pollen and nectar, egg-laying and the growth of larvæ are abruptly stopped. Pollen is very necessary, as it contains protein, from which the tissues of the body are built up and also carries the fat which is transformed into the fat body of the insect. This fat body is a supply of reserve food which is consumed by heat oxidation in the process of larval metamorphosis.

When pollen and honey are abundantly present in the hive, egg-laying and brood-rearing commence early. Incoming nectar and pollen are further stimulants to egg-laying and so the number of larvæ increase. The principal food of young larvæ is pap, a secretion of the pharyngeal glands mixed with predigested pollen. Without the pollen, therefore, there would be no growth, for growth is the elaboration of food into the body tissue.

Again, the longevity of adult bees is dependent upon food. A good quality of honey used in wintering prevents winter loss, due to the accumulation and retention of feces, which results in dysentery.

The bee is a kind of storage battery that is only once charged, and when it has been fully discharged it functions no more and the insect soon dies. The work of the honeybee, therefore is limited to the amount of stored energy. Field work is strenuous and, during the honey flow, the adult worker lives about six weeks. The queen is also shortening her life by egg laying. In winter, the individual lives longer, because, when fa-

vorable conditions are provided, there is less work to be done, energy is expended more slowly, and the bee may live for six or seven months. When spring comes, the bees begin building up to the peak of brood rearing, which should come just before the honey flow.

In the northern states, where spring is short, the building up period is likewise short. This is exacting, and plenty of food is necessary, whether in the field or in the hive. It is better if it be in the hive, since there is then no uncertainty about the matter. Further south the building-up period is longer and food from the field is more dependable, since not as much is needed in a short time as in the north.

The lack of proper food during the growing period of animals produces stunting of size and form. What happens in the case of the bee? It has been shown that the size and the carrying capacity of the bee are correlated. The large bee has a greater carrying capacity than the smaller one. The large bee is able to gather much more than a small bee with a short tongue and little carrying capacity.

This goes back to the supply of food that the queen was given. With plenty of food in the hive and nectar coming in better queens are reared. Also when their progeny are being reared, with plenty of food, there is no stunting and we have these desirable qualities present. A greater surplus is thus obtainable. Bees with short tongues and with stomachs of less capacity do not produce a large surplus.

The number of bees found in the colony, in the spring, also bears a relation to such characters as the length of tongue, carrying capacity, and weight of the bee. These in turn are related to the amount of honey stored in a season. Food aids materially in having more bees in the spring. A colony which has insufficient stores may appear to winter well but will lack its full strength at the beginning of the honey flow. This is due to the fact that the queen ceases egg laying and this stops brood rearing when the stores in the hive become low.

Protection

Protection means some way of sheltering by packing, providing a windbreak, taking advantage of natural topographical protection (a south or southeastern slope of a hill with plenty of trees and shrubs on its brow), or by cellaring. Proper protection lessens the task of the beekeeper in that it combines fall, winter and spring management into fall management. When protected, bees can carry on brood rearing late in the fall, thus providing a large number of bees to winter and to start building up in the spring.

Protected bees do not work themselves to death trying to keep warm, therefore they live longer with less energy expended, and energy expended, in bees, shortens the adult life. Also in early brood rearing the nest can be expanded more, as there are more bees, which means added warmth. More bees are therefore produced in a short building up period before the honey flow, giving an abundance of bees at the right time to gather the nectar. The consumption of food too is less when protection is provided and this leaves more food that can be used in brood rearing. Protection in the late fall, winter and early spring means added warmth, thus enabling the bees to have cleansing flights on warm days.

Experiments performed by Dr. J. H. Merrill with various kinds of protection showed that a windbreak was superior to no windbreak when colonies are not packed and that a windbreak was also superior to no windbreak with packed colonies, using the number of bees at the beginning of a honey flow as an index. He states that, "The windbreak was found to make a great difference in the number of bees in each colony at the beginning of a honey flow, but this result was not as noticeable in packed hives as in unpacked."

Bees

To have plenty of bees in the spring, sufficient food of good quality and protection from the cold aid materially. But in addition to this, there must also be a young, vigorous queen supplied to the colony in late summer or early fall, so that brood rearing will continue in the late fall for at least two cycles of brood. With this large number of bees, to work with in the spring, there will be full-sized insects and plenty of them when the crop is ready to be harvested. The nurse bees are not required to do other work and thus can care for a larger brood area. There will be fielders in large numbers to gather nectar and pollen to keep life progressing and to bring plenty of stores for the next year's family.

Conclusion

In order to maintain strong colonies one, therefore, should have sufficient stores of good quality (forty to fifty pounds of honey) and several frames of pollen; provide ample protection and have an abundance of young bees present in the hives, supplied by a young and vigorous queen.

Iowa.

AMERICAN BEE JOURNAL

Established by Samuel Wagner | 1861

The oldest Bee Journal in the English language.
Published Monthly at Hamilton, Illinois.

Entered as second-class matter at the Postoffice at Hamilton, Illinois

C. P. Dadant Editor
Frank C. Pellett Associate Editor
Maurice G. Dadant Business Manager
Subscription Rates: In the United States, Canada and Mexico, \$1.50
per year; five years, \$6.00. Other foreign countries, postage 25
cents extra per year.

All subscriptions are stopped at expiration. Date of expiration is
printed on wrapper label.

(Copyright 1923 by C. P. Dadant.)

THE EDITORS' VIEWPOINTS

STANDARDIZATION

Frank Rauchfuss, as Chairman of the Committee on Standardization, made some practical recommendations to the National Honey Producers' League. In order to secure lower prices for containers and more uniformity in the market he recommends that honey be packed in three sizes in glass, a one-half pound, a one pound and a two pound jar. These will be available packed in cardboard partitioned re-shipping cases, each holding two dozen jars.

For a tin package he stated that the pails with flaring sides, such as are made for lard and cooking compounds, offer some advantages not found in other styles. They are made in large quantity by automatic machinery, and are consequently low in price. They nest together and take a lower freight rate when empty. They are furnished decorated in various colors with the name of the producer or packer stenciled at the factory in lots of 200 or more.

Lithographed pails must be bought in very large quantity to get a low price, but are especially adapted to the use of the large packer. Probably his most important recommendation was that comb honey be produced in only one style of section, thus greatly reducing the cost of manufacture and making them available at lower prices, and that a single style of shipping case be adopted for the same reason. This would be of great advantage all along the line, not only to the manufacturer and styles, but to the buyer who handles comb honey in the market. The first cost would be heavy to the purchaser who happened to be using a style of comb honey super which might be discarded, but the industry as a whole would profit greatly by the change.

Mr. Rauchfuss is always practical.

SLEEP TO PROLONG LIFE

The magazine "Lectures Pour Tous," of Paris, in its January number, discusses the above subject. This is hardly in line with beekeeping, but the author brings into the discussion an insect, the waxmoth. We quote a few passages:

"In April, 1921, a young biologist of Rennes, Louis Destouches, presented to the Academy of Sciences the result of his researches upon experimental prolongation of life in the waxmoth *Galleria melonella*. The remarks which he gave appear interesting enough to be exhibited to our readers.

"In the prolongation of life," said he, "man must choose one of two theories equally worthy, but which do not appear compatible; the one sustains incessant acting, apparently making compensation for the wear of the body, thus attempting to keep up persistent youth. It is the phenomenon of reciprocal excitation, the basis of life in large cities.

"The other theory recommends slackened life, economizing itself. Is this attitude better than the rest? I do not believe it.

"Between these two means, I believe there is another, resting upon the scientific utilization of sleep as a factor in the prolongation of life.

"In order to establish this thesis upon experimental

bases, we made a series of experiments, in the laboratory of Professor Bordas upon the waxmoth and its worm, *Galleria melonella*. This little being is of a marvelous vital liveness and its activity depends entirely upon the ambient temperature.

"At -2 degrees (28F.), its actions are nil, and we were able to preserve it alive over eight months, in pure nitrogen, without its exhibiting any appreciable loss of weight.

"At 37 degrees (98 degrees F.), on the other hand, the *Galleria* is tremendously active, and its need of oxygen is considerable.

"To lengthen the life of this insect, which lives seven days (in the moth stage) in normal conditions, we tried numberless combinations of sleep and of activity, that is to say, successive changes from 37 degrees to 2 degrees below zero (98 to 28 F.); we obtained best results by alternating heat and cold in periods of 24 hours, after the moth has hatched from the cocoon, which time corresponds with man's adult condition. In those conditions our moths lived 25 days instead of 7, and their egg-laying was two or three times more abundant.

"Indeed, the sleep forced upon the worm of the waxmoth does not much resemble human sleep; yet are not the two phenomena of similar order?"

(We are indebted to Mr. E. Giraud for the above).

The variations in the development of moths have been studied by Professor Paddock, in Texas, and were given by him in Bulletin 231, June 1918, of the Texas Agricultural Experiment Station. They are shown to vary from 48 to 249 days, according to the variations of temperature, as follows:

Egg incubation, 5 to 27 days.

Larval state, 30 to 140 days.

Cocoon construction, 1 to 6 days.

Pupal stage, 6 to 55 days.

Adult life, females, 6 to 21 days.

Adult life, males, 18 to 30 days.

Total possible life of a female waxmoth from the egg, 48 to 249 days, which actually gives the 8 months mentioned by Professor Destouches. But how many of our people, in order to lengthen their life, if it was possible, would care to do so at the expense of activity, as in our waxmoth?

FORMER PRESIDENT OF FRANCE A BEEKEEPER

It appears that the famous Frenchman, Poincare, is a beekeeper. He wrote as follows in the "Revue Agricole":

"Alas! I had some hives in my garden at Sampigny, and the bees were my friends. But the war and the bombardment have driven them away, and I do not know what became of them. It is another sorrow to be added to so many others.

"But I am an obstinate beekeeper and I will rebuild the homes of my bees as soon as I can rebuild my own home. I will hive in them some new swarms, which will give me, like their predecessors, increased confidence in labor and in vitality."

WISCONSIN BULLETINS

Wisconsin publishes two bulletins on bees, by that indefatigable worker, Professor H. F. Wilson; number 333 on "How to Control American Foulbrood," and number 338, on "Winter Care of Bees in Wisconsin." Both may be had at the Agricultural Experiment Station at Madison.

INTELLIGENCE OF BEES

In his "New Observations" Huber tells of the custom of bees of generally building their comb in the direction which will bring them in the shortest way towards the opposite wall of the hive. As an experiment, he covered this opposite wall with a pane of glass, in order to find whether they would be content with a surface which they do not usually trust. He says:

"I had no doubt, however, that they would fasten the comb to this pane, taking chances to later strengthen it by securing more stable attachments, but I was far from suspecting what they would do.

"As soon as the board was covered with this smooth and slippery surface, they deviated from the straight line which they had hitherto followed, and continued their

work by bending their comb at right angles, and so that the forward edge would reach one of the walls left uncovered.

"Varying this experiment in several ways, I saw the bees constantly change the direction of their combs whenever I approximated a surface too smooth to admit of their clustering at the ceiling or on the sides of the hive; they always selected the direction which would bring them to the wooden sides; I thus compelled them to curve their combs in the strangest shapes, by placing a pane of glass at a certain distance in front of their edges. . . . The most singular part of their work is that they did not wait till they arrived at the surface of the glass to change the direction of the combs; they selected the suitable spot beforehand. Did they anticipate the inconvenience that might result from any other mode of construction? The manner in which they made an angle in the comb was no less interesting; they necessarily had to alter the ordinary fashion of their work and the dimensions of the cells; therefore, those on the convex side were enlarged to two or three times the diameter of those on the opposite face. Can we understand how so many insects occupied at once on both sides concur in giving them the same curvature, from one end to the other; how they could decide to build small cells on one face, while upon the other face they built cells of so exaggerated dimensions, and is it not still more wonderful that they should have the art of making cells of such great discrepancy correspond between them? Perhaps no other insect has ever supplied a more decisive proof of the resources of instinct, when compelled to deviate from the ordinary courses"

EVERYDAY ESSENTIALS IN BEEKEEPING

This is the title of Bulletin No. 121, of the Department of Agriculture of Massachusetts, a revision of Apiary Inspection Bulletin No. 14; by our good friend Dr. Burton N. Gates. It contains 32 pages, a number of excellent cuts and is full of good points.

THICK SUPER COMBS AND THEIR ADVANTAGE

In the Swiss "Bulletin d'Apiculture," Mr. E. Rithner explains how he gets thick extracting combs built, in which the queen never lays, because of their greater depth. He gives a photo of two combs of sealed honey, the frames of which are of Dadant super size, but of a width of 60 millimeters (2 3/8 inches), the combs in each of these frames being 2 1/2 inches thick, and weighing, full of honey, 11 pounds. He goes on to explain that he makes all of his super frames at least 40 millimeters (1 5/8 inches) thick and that he secures thick combs by spacing the frames farther and farther. Giving colonies both thick and thin combs in the supers, he finds that if the queen lays in the supers, it is invariably in the combs of ordinary thickness. He avers that the extraction of honey is much more speedy with thick combs than with those of ordinary thickness. We have made it a practice to space our combs so as to place one or two less in the super than in the brood chamber, but have never tried it to the above extent.

INTERNATIONAL STANDARD

The December meeting of the Apis Club of England passed the following resolution by a threefold majority:

That the Langstroth equipment should be adopted as an International Standard in this country (England).

So be it! This is the second time that a number of English beekeepers agree upon a standard frame but it is not the same one.

SULPHUR FOR CURING THE BEES OF THE TARSONEMUS

In L'Apiculture Francaise, Mr. Prieur quotes an old beekeeper, Mr. Devauchelle, as recommending the spreading of powdered sulphur within the entrances of beehives to destroy and prevent the spread of the Tarsonemus and the disease caused by it, which they call "acariose." This is the remedy formerly employed by Poppleton, in Florida, against the similar, if not identical, disease "paralysis."

QUEEN PROLIFICNESS DUE TO POPULATION

In "L'Abeille & Sa Culture" of Belgium, E. Legros sustains the affirmative of this question and gives an instance showing that unless the population is sufficiently powerful, the queen cannot develop her fecundity. That is true, but on the other hand, no matter what the population of a hive may be, a queen of small powers may never become prolific. The quality of a queen is most easily evidenced by the greater or less regularity with which she lays. A queen whose eggs are scattered through the combs can never be expected to produce a large population, for, even if she is prolific she has no method. There are human beings like that, who do enough active hustling to succeed, but unfortunately waste their time in running around. But a prolific queen, who lays eggs regularly, without missing any cells, within the warm cluster, will soon bring her population to the point where she can develop her entire powers. That is why we are in favor of large combs, in which a prolific queen may lay as fully as her prolificness dictates. She must, of course, be well fed by the bees. But a queen without method, scattering her eggs about, will never amount to much.

AMERICAN HONEY PRODUCERS' LEAGUE

The League Bulletin containing the report of the St. Louis meeting is at hand. In addition we have also under our eyes the report of the Treasurer, showing a balance of \$298.02 on hand. But we understand that there are several accounts to be paid yet.

The League reports the following associations in good standing: Oregon, Wisconsin, Utah, Colorado (H. P. A.), Michigan, Ohio, Kansas, Pennsylvania, Iowa, New York, Missouri, Texas (H. P. A.), Debeque Co., Colo., Illinois.

Decided to affiliate, but did not pay the fee: Wyoming, Oregon-Idaho, Minnesota.

Members whose dues are in arrears: Washington, Tennessee, Nebraska, Montana, Texas State, Chicago Northwestern.

A number of matters of importance were discussed and determined. The League Bulletin goes to 1700 members. It is interesting. The officers are the same as last year. Correspondence should be addressed to Dr. S. B. Fracker, College of Agriculture, Madison, Wis.

We have already made a lengthy statement upon the League in our editorials for March. Beekeepers must support this organization if they wish to see it succeed.

CO-OPERATION

"The Western Honey Bee believes in co-operation."

We read these words in that magazine for March. Right, friend Knabenshue; and why should you not? Are not the bee magazines, the bee writers, the manufacturers of supplies, the queen-breeders, all dependent upon the success of the beekeeper for their bread and butter? About the only ones who might object to co-operation are some of the honey jobbers who like to angle in deep waters and catch the little fry, and an occasional big fish.

California needs co-operation, more than any other state, in the sale of honey, for California can glut any honey market, if it does not manage its immense honey sales properly; so California is more greatly interested than any other state in a close understanding among its beekeepers. But we all need co-operation. Will it ever come, fully?

CZEKO-SLOVAKIAN BEEKEEPING

The "Vcelarske Roshledy," the beekeepers' magazine of Czecho-Slovakia, publishes an appeal to the beekeepers of the world in five languages besides its own—German, Latin, French, English and Italian—asking for correspondence from beekeepers the world over and offering to pay for it, and also desiring to exchange with any magazine on bees. Their plea is that they have been down-trodden by the Austro-Hungarian monarchy and that, now that they are free, they are seeking information and establishing an institute for research work in beekeeping, "in order that our apiculture may prosper both from the business standpoint and from the scientific point of view." The address of its publisher is: Rev. Ivan Kitzberger, Nebusice-Veleslavin, Prague, Czecho-Slovakia.

DEMONSTRATION APIARIES IN IOWA

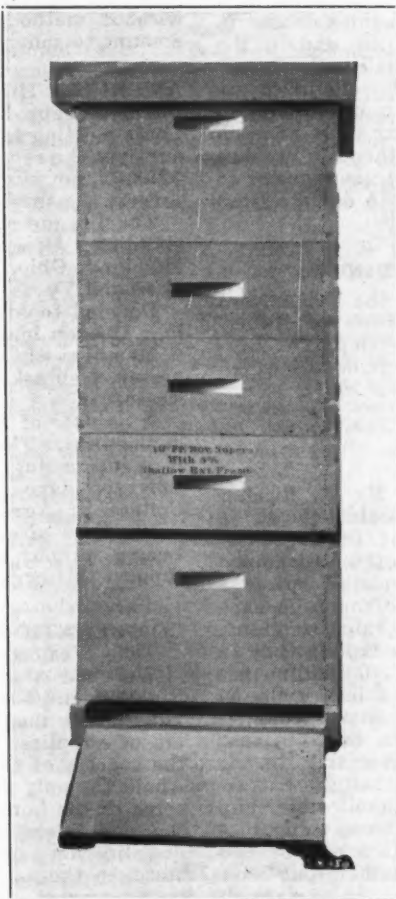
By Newman I. Lyle

DURING the past season 100 demonstration apiaries were conducted in fifty-two counties of the state, thoroughly covering the entire field. Of this number the project was completed in ninety-one apiaries in forty-seven counties. The reason for the difference in figures between established and completed apiaries was caused by dropping out of one apiary and the establishment of eight more, late in the season. This demonstration work was carried on a definite program. First it was necessary for the Farm Bureau to request that the work be carried out in the county. Organization was then made some time during the winter. At that time the beekeepers were called together for a general meeting, and after a discussion regarding demonstration apiary methods a vote was taken as to the advisability of locating an apiary in that county. The vote being favorable, the beekeepers talked it over and chose some one in the community who would be willing to co-operate. All the requirements necessary were that the co-operator furnish adequate equipment for five colonies, that he allow the meetings to be held at his place for two years and, during that time, do everything in his power to interest neighboring beekeepers in the project. In no instance was this work carried on in any community without the beekeepers themselves first making application. At the winter meetings, slides, films and charts were used to make the summer programs as clear as possible.

Seasonal Management was discussed at each of the following meetings: The first meeting of the series took up the subject of Spring Management. At this time the colonies were inspected for bee diseases and each diseased colony was treated by transferring all the bees into clean equipment, stacking up the diseased brood over a weak diseased colony and allowing it to hatch out. Three weeks later this hospital colony was itself treated, and if the treatment had been properly done, at that time the apiary would usually be free from disease, if all sources of infection were also cleaned up. The hive body, bottom board and cover were carefully scorched to sterilize thoroughly. The diseased combs were usually rendered into wax. If, however, they contained a large amount of dead brood it was best to burn them in a pit. If only one or two colonies were found to be diseased it was considered a good idea to sulphur the bees and burn hives and combs in a pit to lessen the danger of infection caused by treating. When the disease was not present a second story was then placed on top of the old hive; the queen soon started laying in this new hive and in that way gradually transferred the brood by changing the cluster.

After the transfer the new hive,

fitted with full sheets of comb foundation, in movable frames, became easy to manipulate. The completion of the transfer required the use of the queen excluder. This slipped between the new hive and the old, confined the queen to the new hive. The excluder was left for nine days, then the old hive was set off, breaking out any queen cells. At the end of twelve days more, all of the bees were shaken or drummed out of the old hive in front of the new which occupied the same position the old one did formerly. If the colony was con-



Arrangement of demonstration colony after manipulation for swarm control. The demonstrator can only visit an apiary at intervals.

sidered strong enough another hive body was added, also, with movable frames, the queen being allowed to lay at will in both bodies.

At the beginning of the honey flow the colony was again manipulated and the queen confined to the lower body on one frame of brood and nine empty combs, by a queen excluder, then as many supers as the strength of the colony and the honey flow would permit were placed above the queen excluder, and above the supers the hive body full of sealed brood. The young bees hatching out of the upper body went below where the queen was and assisted with the work

there. The field bees stored the honey in this upper body and then in the supers. This method was applied only to production of bulk honey for their own use, as section honey is hard to produce and uneconomical for home consumption.

Just before the end of the honey flow the demonstration apiaries were requeened with purebred Italian queens. During the past year 500 queens were introduced and accepted with uniform success. In localities of low rainfall, requeening was not so successful. It should be done early, during a light flow, in order to obtain best results.

In the late fall the wintering work was carried on. At that time the bees were placed in their winter quarters. The introduction of the young queens at the previous meeting provided a large number of vigorous young worker bees to carry successfully through the winter. The hive body of honey that was at one time full of brood and placed above the supers, at the time of Demareeing was then lowered onto the body containing the queen, the queen excluder removed, and the colony was then ready to be packed for winter. The quadruple winter case was used, and since being demonstrated, has been universally accepted in Iowa because of the fact that farmers, as a rule, do not have good enough cellars or caves to use for wintering, and his few colonies do not justify the construction of a special cellar.

In nearly every case the demonstration apiary has been a marked success. In no instance did the check colonies which were operated in comparison with the demonstration colonies, produce more honey. In a few instances this year where the demonstration colonies produced no surplus honey because of lack of rainfall, neither did the check colonies. In the demonstration apiaries the colonies were all transferred into modern equipment, requeened and left with plenty of stores for the winter they were given plenty of room for brood rearing during the season, therefore they have a large number of bees to carry them through the winter. The demonstration colonies were given winter protection, whereas, in many cases, the check colonies were given none at all. In the spring the results will be in favor of the demonstration colonies. In nine cases out of ten the yield in favor of the demonstration colonies was great enough to show a marked profit on the extra work involved, also the extra expense of new equipment. The average increase in the production of honey in ninety-one demonstration apiaries was about 33 per cent.

The total production of the demonstration colonies was 33,415 pounds and the production of the check colonies was 17,405 pounds. The gain, therefore, was 16,010 pounds which, valued at 20c per pound, represented a cash gain of \$3,202.00 on honey alone.

A gain of \$5 per colony was allowed on bees and all demonstration apiaries contained five colonies. This would amount to \$25 per apiary. In

some cases the bees were already in good shape, therefore no gain was recorded on these. The gain represented the increase in value of bees, exclusive of new equipment. This resulted from requeening and an increase in the number of bees per colony. The increased value of bees was \$1,925 on the ninety-one apiaries. The increased valuation was also allowed to four of the additional new apiaries that were established fairly early in the summer, making a total of \$2,025 gain in value of bees. This gain added to the gain in value of honey (\$3,202), gave a total of \$5,227 increase in value of honey and bees to demonstration apiary co-operators alone.

joyed a marked lead. It is interesting to note from clippings and letters from other states that honey is selling at a lower average price than in Iowa. The reason for this has been attributed to demonstration apiary work, as usually a demonstration apiary in a community is an advertisement for honey and helps to create a market. Recommendations based on costs, were made at all times on what honey should sell for to insure a fair price to the producer. Special meetings on grading, packing and marketing of the produce were conducted in the fall. As a result of this work it is felt that in a few years time we will have in Iowa one of the most stabilized honey markets

demonstration possible the methods of treating affected colonies were shown or discussed. Everyone who attended the meetings became thoroughly familiar with every phase of the disease where the apiaries were infected with foulbrood. Where there was no infection the owners were constantly urged to use a system of management to avoid the disease. As a result, many beekeepers changed their equipment from box hives to movable-comb hives. People who already had movable-comb hives started looking through them for the disease. People who did not feel like spending money on so-called "new-fangled" equipment, but who saw the need of such in the profitable production of honey, in some cases sold their bees to people who would make good beekeepers.

At every meeting the point was brought out that bees are living creatures and that they must eat and keep warm and the same principles of management that apply to other live stock apply also to beekeeping. If these facts are hammered home time after time people will become familiar with the principles of bee behavior and work for the profitable results that they should receive from good beekeeping, especially when they see the increased returns from giving the bees a chance.



Demonstration colonies in home-made winter cases.

The demonstration meetings were well attended. The average attendance per meeting was nineteen and the total attendance 7,714 people. An average of two people at each meeting took up demonstration apiary methods, making a total of 812 people who changed their system of management, in addition to the demonstration apiaries. The average number of colonies per apiary was eight, the total number of colonies was 6,496. The average increase in value of bees was estimated at \$5 per colony, or a total of \$32,480 gain resulting from this change in management.

The visitors' apiaries, because of better methods of management, produced an average increase of fifteen pounds of honey per colony. The total increase from these apiaries would be 97,440 pounds which, valued at 20c per pound, amounts to \$19,488, and a total of \$51,960 increased value of bees and honey. Adding this to the \$5,227 gain from the demonstration apiaries, gives a grand total of \$57,187 added to the incomes of Iowa people who were reached by Extension work in beekeeping during the year 1922.

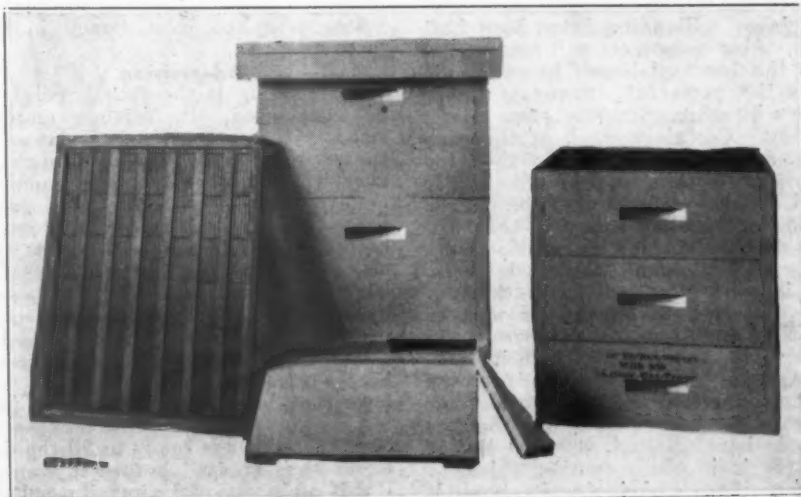
It is interesting to note that since the establishment of demonstration apiary work, Iowa has risen from fourth in the production of honey to second in the United States, tying with two other states for this place. Always before the other states en-

joyed a marked lead. It is interesting to note from clippings and letters from other states that honey is selling at a lower average price than in Iowa. The reason for this has been attributed to demonstration apiary work, as usually a demonstration apiary in a community is an advertisement for honey and helps to create a market. Recommendations based on costs, were made at all times on what honey should sell for to insure a fair price to the producer. Special meetings on grading, packing and marketing of the produce were conducted in the fall. As a result of this work it is felt that in a few years time we will have in Iowa one of the most stabilized honey markets

Another Case Decided in Favor of the Beekeeper

Mr. Chas. E. Wells, of Hudson Falls, N. Y., was just recently sued by his neighbor for \$200 damages which the plaintiff claimed was due him from the fact that Mr. Wells' bees attacked him when he was trying to cultivate his garden, and made it impossible for him to look after his farm properly.

The verdict was given for the defendant, as it could not be shown that Mr. Wells' bees were doing the mischief, and moreover, it was plainly shown that the plaintiff made no effort whatever to cultivate the plot in question.



Outfit for demonstration apiary for bulk comb honey.

THE MARKETING OF HONEY

Problems to Consider in Disposing of the Crop

By G. C. Matthews, University of Minnesota

RECENTLY, my interest in marketing has been greatly increased by having the necessity of selling my honey direct to retailers and consumers forced upon me. While keeping bees in Idaho, Utah and California I could either produce a carload or make up a car with my neighbors, and then the selling for the year was finished. There was no chance to sell much locally, anyhow. Here it is different. Since I am on full time in the university, I cannot keep more than 200 colonies of bees as a side line, and must consequently take what the local dealers offer for my honey or sell it myself. So I have become engaged in selling. More honestly speaking, I have educated Mrs. Matthews to sell it, for she has taken over nearly all of the work excepting handling the cans of honey and some of the bottling.

The symposium on marketing honey in this journal for November, 1922, covered about all phases of the subject. Of the points stressed in that symposium perhaps a standard article comes first. No one is likely to dispute the statement that delivering a poor grade of honey to a customer is not likely to secure repeat orders for the same brand. Various kinds of fall honeys and straight alfalfa or sweet clover honey, such as I used to produce exclusively, do not command the most ready sale in this market. Many of our larger stores flood the city with this product at a low price, labeled clover honey, and thus render the housewives suspicious of real white clover honey when it is offered them. It sells at a lower price, of course, and the merchants cannot see that it hurts the demand. Nor are they the only guilty ones. Some beekeepers put it out. Naturally, this honey must be sold, and the producers in the west are entitled to the best price obtainable in any market. But it ought to be blended with basswood or fall grades of honey which are strong but not disagreeable in flavor. Blending helps both honeys. Few consumers will continue to eat the finest quality of basswood unless the powerful flavor is tamed down by white clover or some milder honey. Certainly much of the eastern amber honey can be thus improved. Nothing can be done which will do more to eliminate the competition of cheaper honey in the eastern market, nothing else will do more toward helping the western beekeepers in marketing their crops, than for the easterner to buy of his western brother and blend the honeys of the two regions.

Another item considered in the symposium is a standard price. It is easy for us all to say that we should have a standard price, but of course it is quite another thing to find a means of bringing it about. It seems extremely difficult to make the

average beekeeper understand that selling honey and producing it are two entirely separate lines of business. If he gets 100 pounds per colony and sells his honey at 11c to a jobber one year, he credits his bees with eleven dollars per colony. If later he gets an equal crop and laboriously sells it out at \$1 per 5-pound pail, he deducts two cents for containers and credits his bees with \$18 per colony. The absurdity of such reasoning is patent, of course, but Mr. Average Beekeeper is not in the habit of computing the value of his services. Just try convincing a gathering of beekeepers that their honey is worth exactly what the jobbers are paying, and no more. They are likely to call the jobbers thieves and say their honey cost 11 cents to produce. But the cost of production has nothing to do with the immediate value of a commodity. That is determined by the relation between supply and demand. The differential between the retailing price of 18c and the jobbers' price of 11c is the beekeeper's pay for turning himself into a middleman, wholesaler and retailer combined in order to sell direct to the consumer. If he would compute the value of the service so rendered he would find the difference entirely too small. As will be shown later in this paper, when the grocer's price per 5-pound pail is \$1 the beekeeper's for delivering such pails at the house door must be at least \$1.25 or he is doing part of his work gratis. It is necessary to add here that the grocer's prices in the cities are, if anything, worse sinners than the beekeepers. The large stores in Minneapolis and St. Paul get large quantities of cheap honey and advertise it at 75c per 5-pound pail, or they buy good honey at 80c and sell it at 85c, or even at 80c. Their advertising low prices spoil many possible sales at higher prices. And they do not make anything by the practice, either. As will be shown later, the man who sells at the higher prices sells the most honey in the long run.

Advertising

Advertising is the fourth point to be considered. It is much emphasized in the symposium. Because of the strong emphasis placed upon it everywhere beekeepers have come to believe that a strong national campaign will cure all the evils of marketing. No one seems to stress the all important principle of successful advertising that it must be followed by an ample supply of the particular article advertised distributed adequately over the whole field covered by the advertisements. Hence it follows that local advertising may pay big dividends to a local beekeeper, because he stands ready to fill the demand thus created before it wanes. But if a big national campaign put on by the American Honey Producers'

League is to yield returns then the League must advertise one or more particular brands of honey and follow up the advertising with a great distributing system that puts those brands in stores in every community where a demand is stimulated. For advertising honey in general as a means of promoting the sales of Mr. Local Beekeeper, the said beekeeper could ill afford to pay one-tenth of a cent per pound. Advertising is merely the first step in salesmanship, and if not followed by the necessary additional steps it takes one on a very short journey to a place very similar to one's starting point.

Another form of service offered by the symposium contributors is that honey should be sold through the regular channels, meaning the grocers. It is stated that if you stand by the local dealers they will stand by you. Quite true in most cases. But, unfortunately, the average grocer is a very poor salesman. As stated above, he does not sell honey, does not even claim to sell it. He carries it, he says. If anyone asks him for it he will produce it from under the counter, in a more or less candied condition, and with dust on the pails. If all the honey in the country had been left for the grocers to market in the last two years there would be left on hands now a very large surplus that would certainly draw down the price. If the beekeeper wants the grocer to do all the selling he must offer helps in the way of advertising, honey exhibitions in the store and the like. But in addition to all that he will have to do some selling on his own account. It is so easy to expect one's crop to be bought from one and avoid responsibility, but it is that very supine attitude on the part of producers that has resulted in the fall of the price. To get the fair price that every beekeeper thinks his due he must put a lot of effort into it himself.

Co-operation

Similar criticisms, I believe, are applicable to all present schemes of co-operative marketing. Too many have come to believe that there is something magic in the word "co-operation." They imagine a co-operative society can take their product, sell it quickly at a price much above the common market price, and return to them all the selling price except for a very small commission to cover the cost of operation. The Idaho Honey Producers' Association attempted to market the honey of its members at a commission of 2 per cent. It is long since deceased. There is little question that it raised the price of honey in car lots in that region by holding the members together but still they would not allow it enough money to pay its expenses. Such an organization has to go out and seek business in competition with the best private concerns in the country and to do that successfully must have a good organization and a good manager. These things cost money. No man capable of managing a large co-operative society can afford to work for less than he can command in other lines. If such societies prove

successful beekeepers must change their attitude. Selling honey costs just as much through a co-operative society as through a private dealer who gets only a reasonable profit on it above his expense. And profit and expenses must be above 5 cents per pound if he packs it in pails and jars.

As mentioned above, if the beekeeper is not willing to accept the price which a dealer can afford to pay, he must turn wholesaler, bottler, and even retailer, and sell direct. If he will but put his prices up to a figure where they will cover the wholesale price of his honey plus the costs of bottling, selling and delivering when all the labor involved is paid for at its real value, he will find that he can use his fall and winter months so as to get a good salary and at the same time do more in the way of boosting the market for honey than can be done in years of saying unpleasant things about the middlemen. Most of the honey produced in Minnesota is probably sold in this way and numerous cars from outside are likewise handled by beekeepers and dealers. One student in my beekeeping classes sold all his own crop from fifty colonies and bought sixteen thousand pounds more to supply his salesmen in the fall months of 1921. His price was \$1.50 for a 5-pound pail, so he felt that he had no reason to find fault with the honey market. Another man in Minneapolis has sold nearly 20,000 pounds since September 1, 1922, at a price of \$1.50 per 5-pound pail and \$2.90 per ten. Now, if honey can be sold at such prices here, it can be likewise sold in the country towns and small cities where the beekeepers live. One of the greatest mistakes that our beekeepers make is to persist in shipping all their honey to the cities. It should be clear to everyone that, if an over supply of honey exists anywhere, it is certain to be felt first in the cities. And an over supply in the cities great enough to force down the price immediately makes itself felt in the country towns also.

It is frequently stated that a price of \$1.50 per 5-pound pail is too high, a profiteer's price. Perhaps. But let us figure costs a moment. Honey at 150 miles from the city brings, say 10½¢, freight and drayage ¾¢ pails at low retail price, 7¢ each or 1 2-5¢ per pound, and labels 1-10¢ per pound; a total of 12¼¢ per pound. When liquefying honey by heating and pouring it through a tank and into containers, evaporation and loss through spilling, burning an occasional batch, breakage of containers, and losing a quantity that sticks to the cans, accounts for about 5 per cent of the total amount put in. Add 5 per cent of the price, 11¼¢ per pound, which is approximately ½¢ per pound. Gas accounts for a little more expense, but we will neglect it. We have then a price of 13¼¢ per pound in the pails, or 66¼¢ per pail. Now the labor involved in bottling, the interest on the money tied up in honey, insurance and risks run should be worth 4¢ per pound to the bottler. This is then the bottler's

profit. It raises the price of the pail to 86¼¢ wholesale. Then comes the expensive step, selling. A salesman who can do a good business in honey must have about 8¢ per pound, or 40¢ per pail for taking orders for the honey, and the delivery will cost 15¢ in the city, still more in the country. All these costs added together make a grand total of \$1.41¼ as the correct selling price, or \$1.40 for convenience. In practice some of the salesmen here have cut that price for a time to \$1.25, but could not maintain it. As stated before, it makes not the slightest difference whether one buys his honey or raises it, whether it be bottled by a bottler in the city or the beekeeper in the country, these costs remain and must be taken into account. Whoever sells at a price that does not include them does a part of his work for nothing and injures his neighbor's market. He injures himself, too. For experience has shown that the man who sells at high prices can keep salesmen enthusiastic and cheerful and is able to sell more than the one who cuts prices. The honey salesman should never forget that honey is a **fancy food**, and as such should be compared with jellies and jams, canned fruits, maple syrup and the like—never with cane sugar syrup or commercial syrups. It is a simple matter to point out to a prospective customer that a quart of jelly or jam contains a much higher water content than honey, say 50 per cent. Therefore, when the quart jars of the two kinds of food cost the same, honey is much the cheaper. Actually, the difference between the two, when measured by volume, is much greater than 50 per cent. Even when maple syrup is brought into the discussion it can be shown that with honey a less quantity of it at a meal satisfies the appetite of the family. For maple syrup is nothing but cane sugar with certain elements from the maple trees that flavor it. This statement does not refer to adulteration but to the fact that the chemical composition of maple sugar and cane sugar is the same except for the impurities, which give the flavor to maple sugar.

Boost the Market

So why should not honey always bring these high prices, however sold? Two hundred and fifty million pounds of honey in the United States should not constitute an overproduction. Only two and a half pounds per capita. Some of us eat a hundred pounds a year. Let no one get discouraged and quit beekeeping because the markets seem to be glutted and the prices falling. It is not an over supply, but a low consumption, and consequently a low demand that is at fault. In fact, the price of a commodity is never determined by the supply alone, but always by the relation of that supply to the demand for the commodity. What we now need is to cultivate a demand, and no better way to do it presents itself at present than for every beekeeper to undertake direct selling at high prices. As an example of the effects of this method, it is interesting to find that in an apartment house

where one salesman for a company sold 60 pounds of honey one week, another for the same company sold 95 pounds the following week. And frequently salesmen for different bottlers find themselves following each other alternately over residence districts, without finding that competition lessens their sales appreciably. The way to educate people to the value of honey is to talk honey, advertise honey, make honey appear attractive, co-operate in distribution so as to lower the costs, offer the finest quality—yes, all these things—but above all, sell it to people. See that they get a chance to eat some of it and then so much talk and worry will not be necessary.

In conclusion, a word should be said about co-operative marketing in the future. There are large areas in the west where the advice given herein is hardly applicable. When producing honey in Idaho I was unable to sell enough honey direct to consumers to pay for the trouble. In such regions the great bulk of the crop must be sold in carlots and it is in handling this kind of marketing that a co-operative society has the best chance of success. If a sufficiently large number of them can be organized and run successfully out there, it may be possible for the American Honey Producers' League to become a real business organization handling millions of pounds of honey annually and distributing it so as to just supply the demand wherever it appears strongest. Then large scale advertising will pay big dividends. As the benefits become apparent the eastern states will fall in line with their organizations and the marketing problem will be solved. But this, for the present, is but a dream. We in Minnesota discussed an organization for two years, but have not yet seen any possibility of making it successful. The beekeepers would like to have it, but are unwilling to pay anything for it. Perhaps, when a sufficiently large number of them learn to sell honey themselves, they will be able to see the benefit of organization and co-operation and we shall be able to realize our dream. Therefore, for the present, let us urge our beekeepers to abide by the advice of state price committees and sell all the honey they can.

A SPLENDID GIFT

Although we made note some time ago of the fact that Arthur C. Miller, of Providence, R. I., had given many rare books from his library to the Dr. Miller Memorial Library, we have only just reached the point of thoroughly appreciating the sacrifice which he has made. In talking recently with Prof. Wilson, of the University of Wisconsin, who is in charge of this library, he told us that Mr. Miller had given upwards of a thousand dollars' worth of books, many of them extremely rare with only one of two copies in existence. Truly Mr. Miller has set a mark which will be difficult for the rest of us to reach.

THE EVOLUTION OF THE SWARM IMPULSE

By Allen Latham

THE study of the honeybee is replete with interest, and not the least interesting phenomenon presented by the bee is the swarm impulse. Why do bees swarm is a question which has called out more discussion than any other one thing about bees, and the swarm impulse has roused more thinking among honey producers than any other problem. For it is a problem, and upon some sort of solution depends the honey crop.

Bees offer a unique phase of life-reproduction. Long ago, in bee-life, the individual bee ceased to be a true individual, much as the bud of a tree ceased to be a true individual.

Swarming is really an act of reproduction. Now we find that of all the instincts in life that of reproduction holds sway over all others. Animals even forget to eat when under the sway of this instinct. Hence there is about as much hope of breeding out the swarm impulse of bees as there is of breeding out the increase instinct of rabbits. Yet I would not discourage anyone from trying to breed a non-swarming bee, for he can doubtless breed a bee less inclined to swarm than others. The very fact that certain races of bees are more prone to swarm than are others offers hope for improvement.

Almost innumerable causes have been offered for the swarming of bees. Only one of them all can be the true cause, the others can at most be only aggravators of the true cause. Hot sunshine, humid shade, small entrances, cramped quarters, excess of drones, and a host of other aggravating factors may hasten but cannot cause true swarming. By true swarming I mean the normal reproduction swarm. An absconding swarm is not a true swarm, and a swarm hurried from its hive because of some sudden impulse is rather a premature birth than a normal swarm.

To find, then, the true reason why bees swarm we must look into the sex instinct of bees. Sometime in the remote ages some sex instinct brought the phenomenon of swarming into being. Let us search for that happening.

Who has not observed, say in August, the wedding season of the ants? A day or so before the day set for the wedding, and especially that morning, worker ants will be observed frantically enlarging the exits from the nest. The doors are thrown wide open, for it is a day of gladness and joy. In the early afternoon the brides and bridegrooms come mincing out, and as their numbers increase they become excited and the winged lovers take to the air. The worker ants are not disinterested. They cannot go with the happy flyers, because they have no wings. Who can

say they would not go if they had wings?

If one is fortunate he may happen upon the wedding altar of these ants. It may be next a branch of a tall tree, and he will see thousands of ants in a mad swarm. Ants appear to rain down from that swarm, and coming nearer, he notes that the living drops of rain are made up of two ants. If the observer follows the wedded ants he will soon see the female reach back and actually bite off her own wings. What becomes of her after that I have never been able to say beyond question. Does she begin a new nest unaided? Does she become installed in an old nest where there is a failing queen? Does she enroll a few worker ants and with their aid start a new colony? I am inclined to think that every one of these things may happen.

In the history of the honeybee there was a time when the nest was mature with many drones and virgin queens. These queens did not then fight as they do now. Then no swarm went out with the old queen. There were no young worker bees, for all the energy of the nest had for weeks past been devoted to rearing the perfect females and drones. Then came a day when sex excitement ran high and forth poured all those queens and drones. Swarming was rather different in that remote time from what it is now. What became of those mated queens? Shall we say that they were much in the position of the mated ants spoken of above? To be sure they did not bite off their own wings, perhaps, for they needed those wings to help in starting the new home.

Now it is a perfectly natural assumption that when these virgin queens went forth to mate all, or nearly all, of the workers of the colony sallied forth. These workers had wings, and in the excitement of the wedding festivities what would keep those workers at home? One might as well expect any normal human girl to stay away from the wedding of her girl friend. If, then, taking flight and wandering about afterward, what more natural than a few workers should be attracted to one of these newly-wedded queens, and with her start a new nest?

I am perfectly aware that I am touching some of my readers in a tender spot. Dear Old Father Langstroth believed that all the wonders found in the bee were wise creations of a moment by the Creator. So many of my readers believe, and it is their undisputed privilege, that God, by a fiat act created and set into action the mystery of swarming. It happens that my mind will not tolerate such acts of God. As I study His work as it lies all about me for my pleasure and study, I find that

God never nowadays does such things. If He does not nowadays, then I have a strong feeling come over me that He never did. If He takes 1,500 years to build a huge sequoia, then He always took time for doing things. We must here remember that a thousand years with us is but a day with God, one of the wonderful truths of the Bible. It is therefore forced upon my mind that the swarming habit as we now see it must have been a slow development carried over ages of time.

It must have followed that those queens which gathered the larger number of workers about them after the wedding time started better nests. They were better fed and hence began to become more prolific. As time went on queens became more and more prolific, and the belief comes that eventually the old queen at the wedding time still retained vigor and value and that many workers would rally to her after the wild flight from the nest.

The subject here becomes most puzzling. How shall we explain the prime swarms and the after-swarms which we see today? If we could explain how queen rivalry came into existence we might see some light. I must confess that, much as I have pondered this subject, I am not yet ready to offer any suggestion as to the origin of the inborn intolerance which one queen has for another. Of course, that queen which attracted the most workers about her had the best chance to survive; but how could a queen-bee without power of logic or mind for figures, reason out that if she killed her sister she would gain more helpers for her own nest? Oh that we might be permitted to visit those past and remote periods of time and see how it actually happened!

Assuming that this rivalry has come into existence, we see the origin of the prime swarm, for the old queen is now trying to destroy the cells of her royal daughters and this in itself is sufficient to prime the issue of the swarm. I say prime the issue, because it is only the cap that sets on fire the real gunpowder back of the swarm. That explosive power back of the swarm is wonderful, and few beekeepers can withstand stopping to watch the explosion of a swarm of bees. Why are the bees so crazy? I smile here when I consider the often-asked question, What bees go with the swarm? The best answer I ever found is, All go who can. Yes, some get left, just as some people always get left in a rush. Some bees, like people, don't have time to make up their minds, hence get left.

The only cause for swarming of any real worth ever offered is this: a superabundance of nurse-bees with not enough young bees to feed. This cause has real value, yet has an absurdity in it. The nurse-bees swarm because of lack of larvæ to feed. Consider for a moment. Is this not jumping from the frying pan into the fire? Those nurse-bees leave a home where there are thousands of larvæ to feed and go into a home where they will not have a single baby to feed for three full days. It

would be more logical to say they went on strike and swarmed so that they would have no larvæ to feed.

Yes, there is real worth in the idea that the cause of swarming lies in a superabundance of nurse bee. The explanation of this reason is the only error in it. Larvæ-feeding has nothing to do with it. Do not forget that these nurse bees are females. To be sure, they are females defrauded of much of their right as females; but who shall say that they have no feelings left? Who shall say that these daughters of the hive have lost the love of attending a wedding? They cannot themselves be wedded, but in them lies a residuum of an instinct which rules all life. When they were dwarfed and changed in their growth they were not entirely bereft of sex instinct. If any of my readers here thinks I am writing nonsense I will merely write one word for his eyes—laying workers.

At first when queens and drones left the hive for mating, the workers to go with them were only old bees which doubtless had long passed the age at which queens mate. As time went on queens became more prolific. As colonies became more prosperous, there were in the hive workers of all ages when the wedding exodus came about. There came a time when, as the impassioned queens left the hive, many worker bees of similar age, swayed by the same passion, though in less degree, left the hive.

To explain how each step of progress was made in the evolution of the swarm impulse would require a volume, and I fear that I have already transgressed in taking up so much space. Jumping over all time intervening, let us rationally apply our theory to present-day occurrence. A colony becomes prosperous. More and more bees come on and every day sees more worker-bees under the spell of the sex instinct. To a certain extent they satisfy the inner craving by what we term play-flight. Finally, as their numbers increase and the nurse-bees have more of that wonderful food than the young larvæ of the hive require, they start queen-cells. Nothing strange in this, as from the very earliest times the whole energy of the hive was bent on getting new queens when the right time came. They ease their bodies by stuffing cells with royal jelly. The cells are sealed, some of them. The feeling becomes stronger and stronger in that hive that a wedding exodus is imminent. Why not, seeing that for millions of years bees have gone through this phenomenon of sending out young virgin queens on their wedding journey?

But, you say, there are no virgin queens ready to go when the first swarm goes. True, but there are thousands of their sisters that are aching to go. Then comes a day for a perfect play flight and any colony without cells will indulge. In this colony, however, there is a fever of excitement that mounts higher and higher. Finally it reaches a pitch that cannot wait and the explosion comes. Hot sunshine may be the

priming cap, humid shade may be it, small entrance impeding air may be it; but the real powder back of the explosion lies in those few thousand nurse-bees which would, if they could, go on a wedding journey of their own. They have wings, why not go? They do go. Flying about awhile they soon settle contentedly with the old queen, now out with them.

What do you think? Does not the true cause of swarming lie in the residual sex instinct of the worker-bee?

Connecticut.

THE OBSERVATION HIVE ✓

By Wallace Park, Iowa Experiment Station

The best type of observation hive for the average person is the single-frame hive. So-called observation hives having several frames side by side are worthless for making worthwhile observations. The one-frame hive may be provided with single-frame supers so that a fair-sized colony may be accommodated if desired.

It is hard to understand how any real student of bees can content himself without a colony in such a hive. Placed at a window of the home or office, the observation colony is a source of interest the year 'round, for there are few times, even in the dead of winter, when there is not sufficient activity to attract attention. I have successfully wintered such colonies here in my office for several years, and as I write, January 10, a pair of them are near me, each well stocked with bees and stores.

If one prefers not to bore a hole in the window sash, a passage may be provided by raising the sash four inches and fitting a board under it through which the entrance may be made. This entrance should be connected to the hive entrance by a tunnel which may have a glass cover so the observer may the better watch incoming and outgoing bees.

It is popularly believed that, unless the hive is darkened except while making observations, the bees will plaster the inside of the glass with propolis to exclude the light. Constant use of observation hives for a

number of years has failed to reveal any such tendency. Burr combs are built on the glass at times, but a few of these improve rather than detract from the usefulness of the hive for observation purposes, as some of the cells are sure to have one side of glass, so that the observer can watch bees at work inside the cells.

The question is sometimes raised as to whether bees behave normally in a glass hive. When newly installed, bees often experience some difficulty in finding the exit; and when they are given the opportunity to choose between working in the light and working in the dark, they seem to prefer the latter. These should not, however, be considered cases of abnormal behavior. I have never found any indication that bees change their fundamental activities in the least on account of the presence of light in the hive.

The plain but serviceable hive shown in the illustration can be constructed in a few hours without special tools and at a fraction of the cost of those on the market. Supers may be made after the same general plan, only the end pieces should be $\frac{1}{4}$ in. shorter than for the first story. A narrow strip of tin, run from end to end under each of the glass sides, gives stability and keeps the glass from falling out when handled. Blue prints may be had for five cents from the office of the State Apiarist at Ames, Iowa.

Dimensions of Parts (From Langstroth frame).

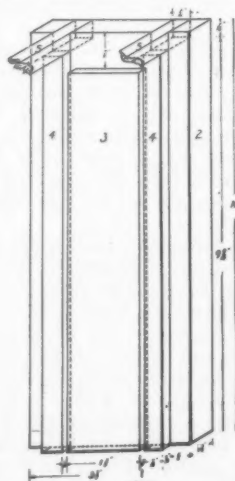
1. $3\frac{3}{4} \times 1\frac{1}{4} \times 30$ in.
2. $3\frac{3}{4} \times 1\frac{1}{4} \times 10$ in.
3. $1\frac{1}{4} \times 7-16 \times 9\frac{1}{2}$ in.
4. $7-16 \times 7-16 \times 9-16$ in.
5. $7-16 \times 7-16 \times 21-5-16$ in.
6. $5 \times 1\frac{1}{4} \times 24$ in.

Legend for Illustration

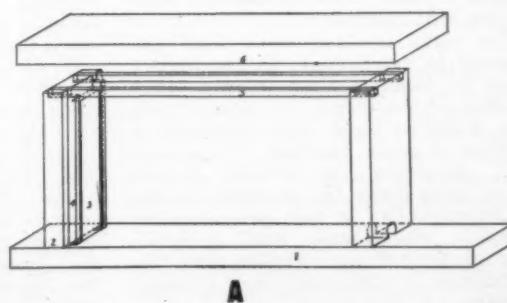
- A. General view.
- B. Details of an end, inside view.

Illinois Beekeeper Hatches Eggs with Bees

Reports going the rounds of the newspapers are to the effect that Mr. Eugene Berry, of Taylorville, Ill., set eggs to hatch over a cluster of bees on November 24. The eggs hatched



Dimensions
1 $3\frac{3}{4} \times 1\frac{1}{4} \times 30$
2 $3\frac{3}{4} \times 1\frac{1}{4} \times 10$
3 $1\frac{1}{4} \times 7-16 \times 9\frac{1}{2}$
4 $7-16 \times 7-16 \times 9-16$
5 $7-16 \times 7-16 \times 21-5-16$
6 $5 \times 1\frac{1}{4} \times 24$



Details of construction of observation hive. A, general view. B, details of end, inside view.

AMERICA'S GREATEST BEEMEN

Who Are They and What Did They Do?

IN connection with the preparation of a new Encyclopaedia of agriculture, now in process of printing, the question came up as to what American beekeepers were worthy to be mentioned. It was only men whose work is finished that were included, so no living men were considered, even though some men now living have done much to advance the interests of the industry. It is impossible to make a proper comparison of the work of a living man whose work is still progressing with those who have finished and passed on. To get the consensus of opinion, the question was submitted to several well-known beekeepers. Some replied very briefly, simply giving the names of those they regarded as entitled to the honor, others replied by word of mouth. Three, however, replied so fully that we pass them on to our readers. It is interesting to note that every person consulted placed the name of Langstroth at the head of the list. Four names were selected, as follows: Langstroth, Quinby, Charles Dadant and Doctor Miller. These were the names most frequently mentioned by all those consulted.

PIONEERS OF AMERICAN BEE-KEEPING

By J. H. Merrill, Professor of Apiculture, Kansas State Agricultural College.

It is fitting that beekeepers pause in their work and ponder over the following questions: How do I know that it is a worker that is laying the eggs in this hive? How do I know that queens do not mate within their own hives? Why is this comb entirely surrounded by wood? Why are the staples driven in the end bars? Why is there a space between the frames and above the frames? Why do I use a smoker in opening a hive? Why do I use a hive of these dimensions? Not only these questions, but innumerable others may be asked considering every procedure of beekeeping; and in answering these questions the beekeeper is at the same time acknowledging the debt which he owes to those who have passed on, but whose valuable observations still remain.

The claim is often made that beekeeping is conducted on a higher plane in America than in any other country of the world. If this is true, then America must have produced a number of great teachers in beekeeping. However, beekeeping would never have made the progress it has in America had it not been for the valuable discoveries and observations made by Francis Huber, with the assistance of Burnens, his peasant servant.

As the activities of a colony of

bees are largely carried on within the walls of the hive, and as hives were formerly so constructed that it was impossible to examine the interior, a great deal of conjecture and fancy arose as to what might be going on within the hives. Francis Huber constructed his leaf-hive, and by means of this was able to observe all of the activities in which a colony of bees normally engages itself within the hive. Through his patient observations he was able to tear off the cloak of fancy which had formerly surrounded bees and to substitute the truth in its place. So accurate were his observations and conclusions that but very few of his statements have ever been disproved.

Although as far back as Aristotle's time, it was observed that some colonies of bees contained drones only, yet it was not until Huber explained that these drones came from laying workers or infertile queens that the real reason for the abundance of drones was understood. He carried on observations and experiments on the antennae and their uses, described the process of wax-making and comb-building, practiced artificial swarming, made many observations on the senses and actions of bees and proved conclusively that the queen is fertilized outside of the hive. In fact, he contributed more to the subject of beekeeping than any other man. His observations on bee behavior furnished a good foundation for our American observers to carry on their work.

Moses Quinby and Charles Dadant became interested in Huber's observations early in life, and were so impressed with them that they wished to carry on similar experiments. Langstroth speaks of Huber as the "Prince of Apiarists" and in his book pays a very glowing tribute to Huber and his work.

America has produced many eminent beekeepers who have contributed much to our knowledge of the behavior of bees, and rendered valuable service by their suggestions in improving the practices of beekeeping. Several of these men are, fortunately, still with us, and the beekeepers of today are privileged to sit at their feet and learn about beekeeping. Others exist now only in memory, but they left their written records and from these we can still learn and profit.

From the American beekeepers who have passed on, it would be difficult, indeed, to select the names of only three or four who have contributed most toward American beekeeping. All would not agree on the selection of any group of men, because each beekeeper's opinion would probably be biased to a certain extent by the amount of use which he made of the knowledge gained from any of our pioneer beekeepers.

There probably will be no dispute

about placing the name of Langstroth in first place. From Huber to Langstroth is a big gap, but Langstroth took up and carried on the work of careful investigations about bees just as Huber had done. Huber's Leaf-hive made it possible for him to observe the activities within a beehive, but it remained for Langstroth to discover and make use of the importance of the bee space in a beehive. He was the first to entirely surround the comb with a complete frame separated at every point above, on the sides and ends, by a bee space. This discovery made it possible for beekeeping to go ahead by leaps and bounds, because it was no longer necessary to conjecture as to what was going on within the hive. Langstroth invented his hive, perfected his system of management, made his careful studies of bee behavior, and then recorded his observations in that classic of beekeeping literature, "The Hive and the Honeybee."

Charles Dadant was born seven years later than Langstroth and although not a native of America, removed here early in life. He adopted modern methods of beekeeping, perfected the process of making Dadant foundation, and developed the system of beekeeping which is now known as the Dadant system. This system has been particularly adapted to the production of extracted honey by using the larger and deeper hive. He was a valuable contributor to bee publications, not only in this country but in Europe, and was a member of a great many beekeeping organizations.

As the present tendency in America is toward the producing of extracted honey and making use of deeper hive bodies, the value of Mr. Dadant's observations are constantly being recognized. The beekeepers of America owe a great deal to Charles Dadant for his successful efforts in introducing the Italian queens to this country as he was the first man to lay down rules for the safe transportation of queens across the water. In addition to his other writings, he had the supervision of the revision of Langstroth's text book. He died in 1902.

Moses Quinby was another American beekeeper whose name presents itself to us when we are thinking of those to whom we are indebted for our present knowledge of beekeeping. Quinby experimented with hives of many shapes and dimensions, but finally decided upon the hive which held the frame of Quinby dimensions as being the one best fitted for honey production. There is a very marked tendency today among many beekeepers to return to this size frame. Quinby was not only a careful student of beekeeping, but a successful beekeeper as well. It is recorded of him that he sent so much honey into the New York market at one time as to cause a break in the honey market. Among many other useful appliances for which we are indebted to Quinby is the bee smoker. This has been improved since his time, but the original idea came from Quinby. His "Mysteries of Beekeeping" will continue to give pleasure and profit to

beekeepers for a long time.

We cannot speak of the American beekeepers who have gone on without mentioning Dr. C. C. Miller. It would be impossible in any short article to write a proper appreciation of what this great and good man did for beekeeping. It would sum it up better if we simply stated that every beekeeper knows how much we owe to Dr. Miller.

Dr. Miller has been with us up until so recent a time, and his work is so well known, that any attempt to describe what a great man he was would be similar to writing a boy a letter describing the virtues of his own father. Dr. Miller's long and useful life was spent principally in working with bees and giving to the world the benefits of his beekeeping knowledge. He will long be remembered for his valuable observations on bee behavior and application of these observations to beekeeping practice. He particularly endeared himself to the beekeeping world through his interesting books on beekeeping, his articles which appeared in the bee journals and his "columns" which he conducted in "Gleanings in Bee Culture" and "The American Bee Journal." Many a beekeeper has been set on the right path through reading "Stray Straws" and his "Answers to Beekeeping Questions." In other words, he was Dr. Miller.

The names mentioned above do not by any means exhaust the list of those beekeepers who have done much to advance American beekeeping. Many more might be mentioned. Doolittle, with his queen-rearing and system of management; Alexander, for his published observations; Townsend, Hetherington and many others. All have done something for the advancement of our knowledge on this subject, but to us it seems that the beekeepers of America are more deeply indebted to the first four men mentioned.

MEN WHO HAVE MADE AMERICAN BEEKEEPING

By Burton N. Gates

I name the Reverend L. L. Langstroth, student, philosopher, experimenter, inventor, able writer and practical apiculturist; he gave to America, and as well to the world, more impetus to the hive with removable combs than any other person, when he advanced his ideas in the "Hive and Honey Bee" in 1853. He preached and presided in Greenfield, Mass (house still standing), experimented at the well-known apiary of W. W. Cary, Colerain, Mass., and published his first book in Northampton, Mass. He is the father of beekeeping as we know it today; an American beekeeper.

Dr. Miller, filled a place which no recent beekeeper has approached. As a clear thinker he equally clearly presented his many observations untiringly. He, too, was philosopher, author, beekeeper, whose chief contribution, to my mind, is in the host of fundamental practices authoritatively laid down. He was strictly a modern American.

These two lead all Americans on generalities. For some one specific contribution, Henry Alley might be mentioned as giving the world the now world-widely used perforated zinc or queen excluder in its various forms and applications (I have never assured myself whether Alley merely used Tinker's zinc or whether Alley perfected it himself and perhaps independently. Tinker perhaps should have the credit. I would like to know). So far we have prerequisites to good beekeeping, good hive, good practices, and excluder for the control of the queen as might be needed. For good combs we go to the inventor of foundation, an European, Mehring. Then for the removal of surplus honey from the combs we likewise turn to another European, Major Hruschka, the inventor of the honey extractor, and of whom I have never been able to learn much more. Swammerdam is credited as having named the sex of the queen for the first time and thus biologically holds right to importance. Other biological discoveries also came early and would require considerable discrimination to determine priority. I hope you are confining the discussion to Americans, but really we have advanced little beyond Langstroth, expect, perhaps, in refinements.

Quinby, Harbison, Root, Hutchinson, Doolittle, King, Alexander, A. J. Cook, and others, all Americans; but what specific contributions have they made that has set adrift a new idea revolutionizing in any degree any single phase of beekeeping? This might apply to Doctor Miller, yet he has a great many counts in his favor, nickels and dimes, as it were, which pile up into fortunes.

MAKING BEEKEEPING A BUSINESS

The Discoveries Which Made it and the Men Who Made Them

By E. M. Cole

Of those who have passed on, the greatest contribution to American beekeeping has without question been made by L. L. Langstroth.

His hive, with the beespace giving movable frames and a loose cover, is the very foundation of commercial beekeeping; few inventions in any industry have made such a sweeping revolution. With the hives formerly in use few men were able to keep bees on a commercial scale where now there are thousands.

He also contributed an entirely new system of beekeeping founded on the principle, first announced by him, that "Bees gorged with honey never volunteer an attack."

The laws of the behavior as laid down by him and their practical application to beekeeping in comb-building, forming of nuclei and artificial increase, robbing, feeding, wintering, etc., have never been equalled, and are taken as fundamental principles in nearly all books on, and systems of, beekeeping in use today.

Some of the practical appliances

contributed by him are, double hive bodies for wintering, both air-spaced and packed with non-conductors, the double brood chamber, the double body with lower story for brood and the upper for storage, the wire cloth bee veil, robber cloth, queen nursery, and possibly the idea of clipping the queen's wings. All these and more, given us on a book still known as "The Classic in Bee Culture," seem to place him head and shoulders above any other.

On one subject Langstroth wrote: "This whole subject of the proper size of hives needs to be taken out of the regions of conjecture, and to be put upon the basis of careful observations." The man who did this was Chas. Dadant, and the capacity of hive and size of combs as worked out by him in long and careful experiments, has contributed more to successful beekeeping, commercial or otherwise, than any other one thing except the invention of the movable-frame hive with loose cover. For not only has a large and growing body of beekeepers adopted this capacity of hive in a single chamber, but practically every beekeeper who has not, has accepted as correct his ideas on the large hive, and endeavor to arrive at the same result by the use of double brood chambers. Early in the rise of commercial beekeeping he practiced and advocated the production of extracted honey and contributed more than anyone else to the result that the production of extracted honey now exceeds that of comb honey, giving larger crops at much less expense.

Chas. Dadant's standing among beekeepers was attested by Father Langstroth in choosing him to revise and rewrite "The Hive and Honey Bee."

G. M. Doolittle contributed a system of queen rearing which has revolutionized that branch of the industry. His method (or variations of his method), of dipped cells started by young bees well supplied with larval food, and finished above queenright colonies, are used by nearly all queen breeders and by many commercial beekeepers.

I believe Mr. Doolittle also gave us the method of fastening foundation in a section by means of a hot metal plate, manipulating the plate by hand; this was later improved by fastening the plate to a machine, but of late years ways of using the hot plate by hand have been so perfected that they are probably the most convenient and rapid of all. Doolittle's "Millions of Honey at our House" has become one of the maxims of beekeepers.

All three of these men brought us methods based on correct principles of bee behavior which cannot be overturned; wrote books which might be termed text books, and by their writings in the current literature of the day contributed to the best methods of beekeeping.

One of the great contributions to beekeeping was the invention of comb foundation, credited to J. Mehring, but according to Mr. E. R. Root (Gleanings, Feb. 1, 1913, p. 90), "It

remained for Samuel Wagner to develop the product we now use with side walls," and Prof. A. J. Cook credits Wagner (on the authority of Langstroth) with the idea of rollers for its manufacture. If, as Mr. Root and Prof. Cook claim, Wagner contributed the idea of the sidewall in comb foundation which made it a success, and the roller which simplified its manufacture and produced such perfect work, it seems the credit should go to him.

The bellows smoker had been used in Europe and was improved and brought out in this country by Mr. Quinby, but as Langstroth supplied the beehive with the one thing that

made it a workable tool, the bee space, so T. F. Bingham in leaving out the connecting tube between the bellows and fire chamber made, in the words of Mr. E. R. Root, "All the difference between a workable tool and an unworkable one." *Gleanings*, Feb. 1, 1913, p. 91. The value of Bingham's invention is shown by the fact that almost every smoker now in use depends upon his improvement for its efficiency.

Another man whose name is not often mentioned, gave us an original and almost indispensable idea: To Dr. Jewell Davis belongs the credit of first transferring larvæ to queen cell cups.

One practical invention to be seen in Mr. Mendleson's yard, which might be useful elsewhere is the swarm basket. It is just a bushel basket with a strong wire hook to the handle. If a swarm is seen clustering in a tree, the basket is hung on the limb and the swarm jarred loose into it. In most cases they will then cluster on the basket itself and when they are again settled the whole thing can be unhooked and carried to the hive, where they are to be located.

Book on Marketing

We have just received for review a book entitled "Principles of Marketing," by Fred E. Clark and published by the MacMillan Co., New York. This is a 400-page book which goes into detail with reference to the different problems concerning the marketing of products and deals specifically with marketing of farm products which are either sold in their natural state or transformed by manufacturing, bottling or otherwise.

The book is very interesting and should prove highly desirable to those who wish to get a better understanding of marketing principles. Some of the chapters are as follows: Large Scale Retailing, Distributive Co-operation, Standardization, Price Maintenance, Cost of Marketing, etc. We recommend this book to the student of marketing. Inasmuch as the honey industry is very weak along marketing lines it seems that better education on the principles of marketing should be sought.

CALIFORNIA'S BEST KNOWN BEEMAN

By Hy. W. Sanders

Most readers of the text books will remember the pictures of M. H. Mendleson's famous apiary in Eureka Canyou, near Piru, Calif., with the cluster of buildings and the terraces with their long rows of hives. That picture, by the way, was taken from the top of the derrick of an oil well, gone these many years, and now-a-days it is not possible to get such a good view of the canyon. The one shown here is from the other end of the yard, looking down the canyon.

Early in the 80's Mr. Mendleson first came west. He had been for ten years a beekeeper in New York State, and it was the accounts in the papers of one of Harbison's famous trainloads of honey that sent him to California to seek his fortune. From that day to this, in good seasons and bad, with varying fortunes, he has remained, and although close to the "three score years and ten," Mr. Mendleson is still an active and practical beekeeper, whose many years of practical beekeeping experience make him much sought after for advice on beekeeping matters.

He makes his home at Ventura, on the coast, and from there has for many years moved his bees up into the mountains near Piru, each spring, to catch the sage honey, moving back again to the extensive bean fields in Ventura County, in later summer.

He has met and had dealings with nearly all the famous beekeepers. He bought his first movable-frame hive from Langstroth himself, and knew intimately Dr. Miller, Doolittle, W. Z. Hutchinson, and others, whilst most of the living authorities have been visitors at his apiaries, within recent years. Mr. Mendleson remembers with special admiration Mr. Wilkin, who was his teacher during his first seasons in California, and who though largely forgotten now, was, in Mr. Mendleson's opinion, a splendid beekeeper.

Mr. Mendleson was, for many years, a foulbrood inspector in his own county, and has been a regular attendant and constant speaker at the local conventions. The Southern California Beekeepers' Association

honored him last year by making him their Honorary Vice President.

There are few apiarists who visit him but can learn some fine points in beekeeping. Mr. Mendleson is a master in hive management, especially in getting perfect combs and in building up colonies. To hear him explain how he creates what he terms a "compact broodnest," and how he makes the bees start new combs in the broodchamber during a honey flow and finishes them in a rather crowded super to get them built clear to the bottom, is something to be remembered; and in most other departments of practical honey production he has something equally worth-while to say.



Mendleson at work in the apiary.

COMBLESS VERSUS NUCLEI PACKAGES

By Jes Dalton

In view of the movement towards barring the shipping of bees on combs from the South to the North, it is well to look into this matter from all sides. Personally I am of the firm opinion that both the combless package and the nucleus package have an established place in beekeeping in America and I believe that in trying to eliminate either package we do the business harm instead of good. I have had years of experience, both as a buyer and seller, in both North and South, shipping out packages for wages, or conducting the business for myself.

What is the reason for excluding nuclei? As a precaution against American foulbrood there is, of course, some argument, but all the Southern coastal states (Alabama alone excepted) have rigid disease laws providing for the burning of all diseased colonies, for the quarantining of diseased localities, and forbidding the distribution of diseased honey in these states. These laws are more rigid than the laws of the Northern states, and should be rigidly enforced.

The question of fraud, or misunderstanding in classing combs of

packages all ready to put in the hives. Imagine my surprise to find those queens, caged in the inside of these packages, dangling around with the bees clustered over them. It was next to impossible to open the cage and procure the queen and get those bees and her all into a hive; from a half to two-thirds, or all, would drift into various hives, get killed and lost. I had fondly planned to raise a comb of brood to a super, insert a newspaper between the colony below and the super, pry open the package a trifle and lay it beside this frame of brood. I didn't save a dozen queens out of the investment. It was not worth the express charges I paid out, except as a lesson.

I venture to say today, after years of experience, that not one buyer out of three can successfully transfer combless package bees to a hive, especially if he has other colonies located where he has to do the job.

For the northern buyer who has lost heavily, and has combs left, and knows his business, combless packages are all right, and when he is buying in 100 to 500 package lots, I do not criticize him for driving a close bargain. Also I can readily see his point in wanting, and paying for bees, not empty combs, or combs of honey. But I do believe for the beginner or person of small experience, that bees on their own combs, with the queen loose, and laying eggs among them, are the only thing to consider. Add to this an entrance to the package that can, upon receipt of it, be opened up so the bees can have a flight, and overcome their restlessness before the top is opened, and I think you have an ideal package for a beginner or any other person who wants something choice and expects to pay for it.

If a man has paid for a certain

tain number of packages, see that he gets them; if you cannot get them in the number he paid for, give him extras until he has them, for you have his money. When it comes to the size of patches of brood that are to be in combs, there is, of course, room for argument. But is there not the same room for argument over the weight of bees full of nectar, and empty bees, at the end of the trip, also the drones? All this, to say nothing of the damage to the queen by that long trip in a cage, dangling around among those bees, and the customer's loss in introducing? I am of the opinion that beemen, large and small, should think this all over well before making a decision. More caution is needed in accepting advertising matter and in placing orders by the customer.

BETTER KEEP COVERED

By L. H. Cobb

Beginners are prone to uncover their hives as soon as the bees begin to fly in the spring, but they will do well to wait until the storms and chilly days are past, for an even temperature in the hive means much to the bees in rearing brood early. The number of bees at this season are diminished by winter losses and old age, and with the colder weather to combat it is hard for them to keep the hive warm enough for best work, and with the winter cover left in place this helps. If there is anything about the actions of the bees to indicate a loss of queen or a shortage of stores it will be necessary to look into them, but if you are sure that they had stores to start them well in the spring, and you see them flying freely and bringing in pollen they are pretty sure to be all right and better for being undisturbed. I have found that we can cut down the honey crop very easily by bothering the bees too much, and especially by making changes in their brood nest. They seem to have ideas of their own about such things and resent such meddling by outsiders that think they know a lot more than they do about bee housekeeping.

Even when it is necessary to look into the hives and give a new queen or queen cell they should be disturbed as little as possible and the cover should be replaced. They need help at this time more than ever. If the double-wall hives are used this is easy, but I have never found it very troublesome when covering with newspapers and a telescope cover, or even oil cloth tacked over the papers, if the work is done on a still day. Handling papers in wind gets on the nerves, and nerves are bad about bees.

Kansas.

Punic and Cyprian Queens

A good subscriber, Mr. H. W. Stratton, Meadow Valley, Calif., desires to get the address of parties having Punic or Cyprian queens for sale. Anyone interested please get in touch with party mentioned above.



Mendleson's famous apiary at Piru, Calif.

brood, adhering bees, etc., is raised. There is, of course, some ground there. As long as we have both buyers and sellers who will persist in doing business on too close a margin of profit, in plain words, as long as we have buyers that insist on the very lowest price, we will have a very cheap packages shipped out.

Years ago, in Oregon, I wanted to requeen a small yard outright. After communicating with several breeders, I selected one who agreed to furnish me queens on half-pound

ginner, or person of small experience, that bees on their own combs, with the queen loose, and laying eggs among them, are the only thing to consider. Add to this an entrance to the package that can, upon receipt of it, be opened up so the bees can have a flight, and overcome their restlessness before the top is opened, and I think you have an ideal package for a beginner or any other person who wants something choice and expects to pay for it.

SHALLOW OR DEEP EXTRACTING SUPERS

By E. F. Atwater

WHERE the central extracting plant is used, what depth of super is most desirable? There is much to be said in favor of the use of either size.

The usual full depth supers, identical with the brood-nests, have their advantages, as the frames are interchangeable with those in the brood-nests, less frames and bodies are required than when any smaller supers are used, there are less pieces to handle and the best combs can always be sorted out and used for brood-combs. Demareeing and other plans of alleged swarm-control and increase are readily applied and extra supers may be used for queen-mating. If one desires to sell out, more purchasers may be found who will buy an outfit on standard combs, than when other sizes are used; also, when selling, it is sometimes desirable to make up extra covers and bottoms, then make a colony of increase on every body of good combs, as an outfit will usually bring more money when handled in this way.

At extracting time, if combs are not over one-half capped, it is probably true that more honey can be uncapped and extracted in a given time in full-depth combs than in the shallow combs.

Among the disadvantages of the full-depth combs are: a queen excluder must usually be used to keep the queen below during much of the season; combs are far more subject to sag and injury during hauling and extracting and no doubt the sagging goes on while heavy combs are still on the hives; combs of honey will often rub against each other in hauling, and so become bruised and leaking; fully capped combs are often far from straight and even, and much time may be taken in uncapping some of them; the supers of honey become burdensome to handle, and consequently are often handled roughly, and where the standard thickness of top-bar projection is used, hundreds of frames have the projection broken off.

As no practical producer can afford to use the same spacing in the supers as is used in the brood-nest, there is, as yet, no practicable method of holding the combs in the deep supers, so that they cannot swing and bruise the comb surfaces. If wide self-spacing and end-bars are used, so that thick, heavy combs are produced, which may be uncapped faster than combs of narrow spacing, then the boasted interchangeability is gone, and, further, the wide end-bars interfere very seriously with rapid removal of the empty combs from the baskets of the extractor.

If extra wide end spacing is not used, then a vast amount of time is spent in spacing combs, whenever and as often as supers are put on the colonies, and the saving of this time,

is not of less importance, because many do not realize that there may be a better way.

When it comes to uncapping and handling, in and out of the extractor, it is entirely possible that the deep combs have a little the advantage, especially if not solidly capped, largely because there are less pieces to handle.

Advantages of Shallow Combs

However, while the exclusive use of full-depth combs has important advantages, yet shallow frames and supers, if not too shallow, have some very good points, and especially is this true where the central plant is used.

First, there is far less need that a queen excluder be used, especially in the northern states, as the queen does not, as a rule, readily nor for long, lay in the shallow supers, and the better the flow, the less the tendency for the queen to lay above. This is quite an advantage, as no matter how well strong colonies may store above excluders, there are too often some colonies, probably a little below the best storing strength, which do not readily store above the excluder. If there are no drone cells in the shallow combs, there is less tendency for the queen to lay in them.

If a broodnest as large as the ten-frame standard, or larger, is used, with shallow supers above, many queens, in a good season, will not go above after the first spring spurt of brood-rearing.

The shallow combs are far less liable to damage in hauling or extracting, and will be handled more carefully all along the line from the hive to the extractor, as the weight of the heaviest shallow super is not excessive.

When it comes to uncapping, if the combs are thick, with eight frames in a ten-frame super, or seven in an eight-frame super, these frames are a joy to handle, as they average more nearly straight and even than do the deeper combs, and a single rapid slash on each side, usually leaves them nicely uncapped and smooth as a board. A top-bar wider than 1 1/16 inch should not be used, and our preference is 1 inch, while a narrower top-bar puts too much honey through the capping melter rather than the extractor. If a very wide top-bar is used, the combs will not nearly so often be bulged out beyond the top-bar, and uncapping becomes slow and tedious.

In loading the shallow combs into the extractor, two shallow frames may be grasped in each hand, and so two baskets loaded at once, and in removing the empty combs from the baskets of the machine the same procedure may be followed.

Some advocate loading the extractor with the top bars of both frames in the middle of the ex-

tractor basket, then when they are lifted from the basket, the ends of the top-bar of both are grasped, and when lifted out, one top-bar is allowed to roll over in the fingers, bringing both frames in proper position to hang in the shallow super.

Some wire the shallow frames with two horizontal wires, while others find them very satisfactory with no wires at all; one friend has several thousand shallow supers, and I believe that few or none of the frames are wired.

The shallow frame need not be expensive, yet must be substantial.

If Hoffman end-bars 1 3/8 or 1 1/2 inches wide are used, and the full number of frames used in each super, then the combs will be ridiculously thin for uncapping, while if less than the full number of combs be used, then all combs must be hand-spaced, whenever supers are put on the hives. If one can be content to hand-space all shallow frames, then the unspaced, plain frame will be as satisfactory as a frame with the usual Hoffman end bars, as the frames may be crowded together and an extra frame put in when hauling supers home to extract, which puts a partial stop to the swing and bruising of comb surfaces, and the plain frames are nicer to uncap and permit of a little more rapid work, as there are no projections to interfere with rapid uncapping.

If it is desired to use wide spacing, to secure good thick combs, readily uncapped, as advised by some, end-bars of Hoffman or other type may be used, but this is quite objectionable, as the wide end bars catch on the screens and projections in the lower ends of the extractor baskets, and interfere with rapid removal of the empty combs.

I have prepared a few shallow supers for trial, which avoid more than half of this trouble, by having one end bar on each frame, 1 23-32 wide, and the other end bar only 1 inch wide (the same width as the top bar). These frames will always be put in the supers with the self-spacing end bars at one end of the super, so that the frames at that end will be self-spaced, eight in a 10-frame super, or seven in an 8-frame super, for thick combs and rapid uncapping. In uncapping, the wide end bar will be kept uppermost, and at the bottom of the frame there will be no spacing arrangement to interfere with rapid uncapping. Neither will there be anything at that end of the frame to interfere with lowering the full combs into the extractor baskets, nor anything to catch and hinder the rapid removal of the empty combs from the baskets.

Naturally, full combs in such frames can be uncapped more rapidly than when both end bars have self-spacing devices. When these shallow frames with one very wide Hoffman end bar are returned to the supers the ends not self-spaced will require some hand spacing, but this will not require nearly the time that is needed with the usual arrangement.

The self-spacing feature at one end of each frame, 1 23-32 wide, will

to a very large extent do away with the swinging and bruising of combs of honey when hauling supers to the central plant, and the amount of hand spacing of combs, when placed on the colonies, will be reduced by half or more.

Removing the Honey

In removing honey from the hives, when escapes are used, there is little preference between shallow and deep supers, but where escapes are not used the advantage is distinctly with the shallow supers.

My own experience with carbolite cloths shows that often the bees rush down about 6 or 7 inches and are very slow to go further, but with the shallow comb, well capped, the super is then ready to remove, and with six or seven carbolite cloths, removal of supers is quite rapid.

The late John M. Martin wrote, years ago, that the bee brush was obsolete, as bees could be shaken clean enough from the combs. While this may be true of Cyprian and Holy Land bees, and perhaps blacks, it is not the rule with Italians and Carniolans, where full-depth frames are used, but I have seen combs of about the depth of shallow Dadant shaken free from bees very rapidly, three men loading two trucks in a surprisingly short time, and probably much quicker than a like amount of honey could have been taken from deep supers by the shaking and brushing method.

However as pointed out by Louis Scholl and others where the shallow combs are well capped, so bees will not stop to fill up from empty cells, the lids may be removed from several colonies, the bees smoked just enough to start them running down, and followed up with more smoke, never overdoing it, several supers may be cleared of bees almost as quickly as one. This is undoubtedly one of the most rapid methods of removing honey that is practiced.

Where the combs are not well capped, a combination of smoking and "jouncing" is best, or use the bee escape.

At distant yards, where a preliminary trip to adjust the escapes may not be practicable the possibility of rapid removal of honey, by the use of shallow supers and some one or more of the plans described, is worth careful consideration before deciding on the exclusive use of the deep supers.

Depth of Super

With Mr. H. E. Crowther and Mr. H. M. West, years ago, we gave a thorough study to this question, and after long experience with the shallow frames of 5½ inch depth, and having seen many frames in use of 4½ and ½ inch depth, the 4½ inch depth was at once eliminated from consideration, as for practical purposes; it is only a toy, while no particular advantage of the 5½ inch depth was apparent except that it was a "standard." However, while it is often desirable to endure some disadvantages in order to have goods interchangeable with those which are standard, yet we eliminated this possibility at once by

deciding on a top bar full half an inch thick from end to end, forever discarding, in our shallow supers, the absurd and inadequate 5-16 inch thick, weak, ever-breaking projections used on the standard frames.

From the description in "Langstroth Revised," we thought that the Dadant shallow super contained frames exactly 6 inches deep over all, and it was this depth on which we decided, giving us a comb nearly as deep as the outside depth of the standard shallow extracting super, yet the total depth is readily accommodated in an extractor with baskets only 12½ inches wide, which size is readily obtained.

As we use top-bars only ½ inch thick, and for this depth of frame the thickness is ample, we have about the same depth of comb as in the Dadant shallow frame. These 6-inch shallow frames are very satisfactory, and quite a little more "business-like" than the usual shallow frame of 5½ inch depth.

When the extractor is loaded with 16 of these 6-inch frames, the total capacity is about equal to ten of the standard full-depth combs.

So far as I know, no 8-frame machine has yet been made to take 16 shallow frames, which are even slightly deeper than ours.

If you "jounce" these shallow supers to rid them of bees you will understand why the top-bar should be nailed on with 5½d or 6d fine cement coated nails. The 5½d is a special apple-box nail, slimmer and less apt to split the wood, than the 6d nail.

The 7½ inch depth of shallow frame we did not long consider, as it fits poorly, any extractor made, and if used in the regular 8-frame extractor the capacity is reduced to the equivalent of about six standard frames.

The 7½ or 7¾ inch depth of shallow frame is very readily uncapped, but the 10-frame supers are quite heavy to handle, compared to those containing the 6-inch frames. Nor are the 7½ inch frames as successfully used without excluders as those of 6 inch depth, as the deeper the comb, other things being equal, the greater the liability of the queen going above to lay, unless excluders are used.

All in all, the next 1,500 supers made for use in my apiaries may be shallows, with 6 inch frames, top bar exactly ½x1x19, same thickness from end to end, self-spaced at one or both ends of each frame, so 7 will fit in an 8-frame super, or 8 in a 10-frame super, and nailed with long, slim cement-coated nails, so they will last almost forever.

These supers, when filled with honey are heavy enough to handle, and equal or superior to any for rapid removal of honey from the hives, the fewest possible combs are broken in handling, hauling or extracting, no wiring is needed, and they will be practically free from swinging and bruising of combs when full supers are hauled to the home plant.

They may be manufactured eco-

nomically, will last indefinitely, if desired thinner foundation may be used in them than if deeper combs are used, the queen is less liable to go above. All points considered, the shallow supers with wide-spaced frames, will exactly fill the need now felt by many. Idaho.

HONEY CANDIES

By D. C. Gilham

In making honey candies the honey is not boiled, or heated at all, a cold process of mixing and making so as to give the candies the original honey flavor. For chocolate coating the goods, a regular outfit used by candy makers is necessary. Around Easter time, many homes make their own Easter eggs, using a hat pin or a fork to hold the cream egg while coating same with chocolate, but that won't work in this case when you want to turn out quantity as well as quality and make it pay. Chocolate coating comb honey is tedious work, takes longer than ordinary cream or nut candies. Time is money, therefore honey candies of this nature cost more. The chocolate is all ready for coating work when purchased from the manufacturer. To overheat it in melting will spoil it, it turns sugary. To add water or more sugar or allow any honey to mix with the chocolate when coating will spoil it as a coating product, and you will not be able to put the gloss on your finished product, which means much in the eyes of the purchaser. It might taste just as good, but you know looks count, even the girls think so today. The package has much to do with the sale of any product. I have seen inferior candies in expensive packages sell faster than good goods not put up so fancy.

At one time I tried using all bitter chocolate for coating, then bitter-sweet chocolate, partly bitter and partly sweet, thinking that the honey alone would be sweet enough for the consumer, but found that the majority wanted a sweeter product and the regular sweet chocolate coating of good quality was what they wanted. Some folks like bitter-sweet candies, but to make business go, we cater to the taste of the majority.

To get a good gloss on your finished product is all up to the coater. It is a trick of the trade and must be learned. I coated many pounds of candy before I got onto it right, with all the showing of how it was done and watching the other fellow do it, until one Saturday night about 10 o'clock while working alone on coating some candy it came to me all at once and I realized I had accomplished something in the candy game that I had been working for. I went to bed that night feeling pretty happy over my new knowledge.

We can always learn something and just at the beginning of this season I discovered that old peanut butter and fresh peanut butter make a big difference in the taste of a finished piece of HON-E-NUT CANDIES. Watch what you are buying and a few cents more put into your goods to make quality, pays in the end.

WHAT ARE THE MOST DESIRABLE IMPROVEMENTS IN BEE CULTURE

(From Annals of Bee Culture, 1872)

By Charles Dadant.

FOR the last few years the genius of the American beekeepers has been traveling so fast in improvements of hives, more or less rational, that it is perhaps time to stop and look backward to see if there are not some untrodden paths to be discovered.

In this article I propose to draw their attention to two subjects of the first importance to them: 1. The improvement of honey-producing plants; 2. The improvement of the honeybee.

Man has at length ceased to consider himself the fallen being that he did during the first centuries of Christianity. He knows now that far from being inferior to what he was in the beginning, every day adds something to his ideas, to his intellect, and to his power. He knows that if he has so long been poor and feeble and a coward, it was because he was but obeying the law of all beings who, on the threshold of life, have everything to learn.

His doubts and his fears now vanish before him. He begins to know himself and his powers, and is certain of triumphing over difficulties. He has discovered that he is the king, the master, of all the beings that surround him. He knows now that he can model them at will. Out of thorny bushes he has made countless varieties of pears, apples, plums, peaches, etc. The most insignificant flowers have been forced to enlarge their corollas and change their colors to please the eye. The vegetable kingdom has been compelled to submit to all his exigencies, either for ornament or usefulness.

It is, therefore, with perfect confidence of success that I propose to the beekeepers to require from the red clover shorter corollas than it has at present, in order that the bees may gather from its flowers the abundant treasures of honey that have so long been locked up from them.

Billions of pounds of honey are lost every year in the red clover blossoms. This honey man can appropriate to himself, if he so wills. There are several ways to attain this end.

1. Selection. By selecting such clover heads as the bees have been seen to gather honey from, saving the seeds and sowing them separately in dry and infertile soil.

2. Hybridization. By trying to cross the red clover with white or al-sike clover.

3. Analysis. As each part of a plant is composed of different elements, by having a skillful chemist to analyze separately the leaves, stems, and corollas of the clover it could be found out whether the corollas do not need a certain element not necessary to the development of the other parts of the plant. By cultivating clover in the same field for years and giving back to the ground all the elements

necessary to the growth of the plant, but withholding such as are necessary to the formation of the corollas.

By some of these means we may be able to create a variety of red clover as advantageous to the bees as to cattle.

The power of man is not confined to plants; it extends also over the animal kingdom. There it has produced its greatest marvels; for it has not only changed the form of beings, but has modified their instincts to suit his wishes and his necessities.

Dogs, for instance, became, at his bidding, bull-dogs for the farm, hounds for the chase, King Charleses' for the ladies' pets, shepherd dogs, pointers, etc.

In fecundity the animals have been compelled to obey the will of man. The pigeon increased its laying tendencies from one to two broods yearly, to ten or twelve. The hen, which in a state of nature would lay the six hundred eggs in her ovaries in ten or twelve years, has been forced by man to lay nearly all of them in four years.

What man has obtained from dogs in intelligence, and from pigeons and chickens in fecundity, he can obtain from the honeybee. By judicious breeding and selection he can obtain a stronger, gentler and more industrious variety.

By a rational system of feeding, he can force the queens to lay in two or three years the hundreds of thousands of eggs that their ovaries contain. We should notice that nature is one in its operations, notwithstanding its infinite diversity. To secure a more regular and rapid breeding from the pigeon and the hen it was sufficient to place them in a suitable climate or atmosphere, and to give them an abundance of suitable food. After a few generations their frequent laying became an established habit and a natural necessity.

All beekeepers know, or ought to, that during spring, if there should be several cold days in succession, the queen will stop laying, and only begin again after several days of mild weather. It is also a known fact that if the bees are placed in a hive sufficiently protected, and if they receive every cold evening a few spoonfuls of syrup, the queen will continue to lay as well as if the weather was warm and sunny. If this attention was continued for several generations, it is possible, nay, it is certain, that the continued laying would become a fixed habit.

A careful choice of breeds; good shelter against the changes of the weather; large hives; straight combs; so that the queen need lose no time for want of room; stimulating feeding during cold days; by these simple means we will certainly accomplish the desired results, and our success

with bees will prove, even more, the power of man over the animals that are subject to his dominion.

BEE PASTURE IN SOUTHEAST MISSOURI

By L. A. Schott

This part of Missouri is noted for its fine watermelons and cantaloupes and there is an immense acreage raised here each year. There are six counties that make melon growing a specialty. There was last year, within a radius of two miles of my home yard, something over 400 acres of watermelons and about 200 acres of cantaloupes. We very seldom get an unmixed crop from either. We also have here a big area devoted to cow pea growing, and last year, from this station, there were shipped 13 car loads of cow peas. There were also loaded out here some 115 cars of melons. And as they are both good honey plants it is hard to tell which is best. You can always tell pea honey from melon by the flavor. The pea honey has a very decided bean flavor until it is cured out. It also has a bluish color, and is somewhat heavier than melon honey. In fact, when bees work peas you can tell by the scent late in the evening when going into the beeyard. In 1920 we had a surplus of melon honey in this county, both extracted and comb. A Mr. Hoffman, of near Morley, made an average of one super (of 28 sections) of fancy comb honey at this yard, being about the center of the melon acreage. The hills are abundant with white and red clover.

The honey from melons and cantaloupes is very delicious, and has a fine body. It is about as heavy as white clover, but much whiter. In fact it is so clear and white you can hold it to the light and it is almost transparent. It has a flavor somewhat like fruit bloom. The melons commence blooming about the first of June and white clover the 5th to the 10th of May. I have seen them quit clover and go to melons. We have two crops of cow peas planted here each year. Early peas are planted the first part of May and commence to bloom a little later than melons, and sometimes run together, and that gives us a mixed crop unless peas fail to produce nectar, which they sometimes do. The late peas are sown about the 10th of July, and come in at a time when bee pasture is scarce, in August. But, in fact, southeast Missouri has so many sources for honey that we have something coming on almost all the time. The first blooms in spring are dandelion (some blooming now, Jan. 22), which stimulates brood rearing, and next comes willow, red bud, plum (wild and tame), cherries, berries and peach, apple and so on down the line. White clover is one of our main flows. In the fall we have bonaset, Joe Pye weed, heartsease, Spanish needle, goldenrod and asters. One of our spring blooms is persimmon, which is very common here.

VOCATIONAL WORK IN BEE-KEEPING

The amount of work done and the interest displayed on the part of vocational students in beekeeping courses is hardly realized by the majority of our subscribers.

A recent letter from the Department of Rehabilitation at Washington, D. C., gives the information that vocational courses are taught in practically all State Universities and Agricultural Colleges throughout the country and a large number of these carry beekeeping courses in their curriculum.

In addition to this, there are in the neighborhood of 10 independent vocational schools which are organized specifically for the instruction of disabled soldiers. Nearly all of these last ten have complete courses.

As an example of the initiative and real desire for beekeeping knowledge on the part of these vocational students, we would cite the case of the class in beekeeping at the State College, Brookings, S. Dak.

At a "Hobo Day" of the college on October 28, 1922, all departments of the college were represented in the parade in one manner or another.

The accompanying photograph gives the parade of the Vocational Beekeepers' Department and also their float in the same. Their idea was to show the advance made in beekeeping during the past few years and to show that the day of the box-hive beekeeper is now past.

Mr. A. G. Pastian, one of the vocational students in beekeeping at this college, is among the foremost in the class. He not only has an apiary of his own there in which he is practicing the teaching given him through the course, but he has also been instrumental in having complete exhibits at the State Fair during 1922.

Nearly all students in the Beekeeping Department of the Vocational Schools are combining beekeeping with poultry raising and fruit growing, thus making an ideal combination for later practical work.

In recent conversation with some of these students from one of the nearby schools we were agreeably surprised at the very close interest displayed by these students in their college courses.—M. G. D.

THE HUBER LETTERS

(Continued from March)

Lausanne, August, 14, 1829.

A visitor from Geneva took the pen out of my hands yesterday; I was sorry of it. I do not like to delay my replies, especially when it is my cherished children who ask for them.

I also have put red color upon some of my bees, to follow with my eyes a young queen in the air, when she takes flight, when she rises too high; this paint has often given me the pleasure of having the means of discovering them. If we wish to know how long it takes a bee to return home, after having gone a certain distance, sprinkle her at her exit and upon her return; the two moments, noted from a watch, will tell you what you wish to know; but if you take one when she is about to join her companions and go home, the multiplied contact will soon have cleaned her of this strange ornament and rid her of her domino. Bees have a taste for cleanliness which has often confused me; what to do about it? It is a law of nature. Here is what I devised, which is the only method that ever succeeded: With pincers grab the worker which is to endure this coercion close to the base of the large wings, without injuring it, and with a single stroke of the scissors cut one of her antennæ. This method of marking them is infallible, would you believe it? It appears to do them no harm; I do not know of any of their operations in which this proves an impediment; they lose none of their instinct. Perhaps you will not easily believe that depriving them of both the antennæ tips deprives them of it entirely. The bees, the drones, the queen even, after such an operation recognize neither their mother nor their young, nor even their home; with the antennæ nothing is hidden from them, the help of

their eyes even seems or is useless to them in the dark; they work in the deep darkness of their hive, as well in the night as in the day. I would like to respond as pertinently to your second question, but it would be now only to acknowledge my ignorance.

Robbing by Bees or Wasps

Lausanne, September 16, 1829.

I told you a few days ago that I had never seen the robbing of which many speak, and that I was, upon that point, scandalously ignorant. I find, however, in my memory, a fact of which I can give you an account and about which I have not read anything anywhere.

The bees have many enemies but, informed on how to defend themselves against them, they usually do it with success. In other circumstances, rarely, however, they happen to succumb and perish under the attacks of their too numerous enemies. The bees, that share with us the privilege of living in societies, share also the inconveniences of this. They have their vandals as we do, and their invasions are to be feared. That of which I was a witness, in 1816 or 1817 (which was properly named the year of famine) was due to too great a multiplication of wasps on the one side, and on the other side the weakness which the scarcity of food had produced among the bees. At first glance, the number of the attacking forces was at least ten times as great as that of the legitimate inhabitants; thus, I lost all my colonies that summer. It was not only the honey which those mean robbers sought. I had also the sorrow to see them kill the bees, cut them to pieces, pull off the heads, separate the corslet from the abdomen, rejecting that section, although it was the only one that might have contained honey, and bring to their young only the heads and the corslets in which they could find only hard parts, difficult of digestion. This most singular fact was also noticed by an able observer, M. Perot-Dios. There can be no doubt in this regard (what you have said to me about it proves it); you have very correctly seen and I must advise you to instruct your own self, afterwards reading the best authors on the subject which interests you. If you read them first, you will run risk of becoming prejudiced; the opposite method will not have this inconvenience; it is to Reaumur's works that I refer you; they are entitled "Memoirs to serve in the history of insects."

Here are a few words on robbers which I find in some letters from my son. He writes me as follows:

"I believe that in most cases they are not bees of the same apiary. I made the experience of it once, by dusting them with white and I saw all of them going to another apiary. It is natural that in their travel the bees recognize the weak colonies; they are always attracted by the odor of honey when the fields do not yield much. A good bee flies from her hive straight, that is, she departs from it usually in a direct line



Vocational students of bee department of Brookings, South Dakota, College of Agriculture, in Hobo Day parade.

through the air and comes back in the same way. She is not likely to perceive or visit the hives situated on the same battle front."

However, there is an inconvenience in the proximity of hives to one another; to isolate them is much better. I am going to give you a proof of this that you will not find elsewhere.

When the queen has gone out of the hive and comes back, she rests herself indifferently on its stand, without concerning herself of whether her stopping is in proximity of another hive; in such case she may be stopped and seized as a suspect stranger by the guards of the hive which she has approached too closely; narrowly held, restrained in her motions, not receiving the food which she may need, she finally loses her strength and even her life without

having been wounded. The strange bees have objected to her visit and through this quarrel her own hive becomes queenless, which means lost; isolation of the colony prevents this entirely. Those who know of the discovery of Schirach know how her loss may be remedied. But I will not repeat it here.

Your mothers, my dear Elisa, have accustomed me to a tireless interest. This interest has followed us during our entire existence and that which you will notice in me is simply the continuation of it. I thank you nevertheless for having noticed it; your mention of it moved me very perceptibly. I saw, if only in a flash, that our sentiments, our friendship especially, may continue and perpetuate from generation to generation; to feel is to live, is it not?

(To be continued).

THE TEMPERATURE OF THE BEE'S BODY

By Dr. K. Brunnich, Reuchenette, Switzerland

It is an old, well known fact that the temperature in the midst of the broodnest as well as in the winter cluster is rather high. Berlepsch found the warmth in the brood nest above 36 degrees C. Later on our U. Kramer made investigations in the last years of the past century and found interesting results. But all these experiments with an ordinary thermometer in the midst of the bees are inexact, because the bees flee from objects of glass or metal. They form a void around the instrument and then, of course, the temperature will be less than in the midst of the bees. It is even possible that the results of the beautiful investigations, made in the Entomological Bureau of Washington, on the same subject may be a little too low, although the thermo-electric needle is very small. But never before I made my researches in 1918, with a thermo-electric needle had there been temperature of the **bee's body**. I published the results in the number of September, 1918, of A. B. J.

My results, which I published in the first number, 1919, of "Zeitschrift für Angewandte Entomologie," in detail, found a strong opposition by professional men, because they had accepted the results of the Bulgarian physicist, Bachmetiew, who had made some years before investigations on the temperature of insects in the same manner as I did. His researches were very beautiful, but unhappily he examined only butterflies and beetles, and not a single hymenopter. His conclusions were the following:

1. The temperature of insects changes very largely without bad consequences for their life, and it is, in the state of rest, equal to the temperature of the surrounding atmosphere. When the insect moves the temperature rises.

2. At 39 degrees the insects make violent movements and will die at 47 degrees.

3. With the sinking of the external temperature the inner warmth of the insects sinks equally till a certain temperature beyond 0 degrees; he calls it the "critical point," where the temperature rises again and then sinks again. These conclusions the German entomologists accepted also for the bees, but they were wrong, as I have proved and will prove once more.

I will quite shortly repeat the chief results of 1918. I found that the **outer temperature had no influence at all** on the inner temperature of the bees, nor had the **state of the bees**, whether they were loitering on the alighting board or flying out or returning to their home. There were differences in the temperature, but I attribute them to circumstances of the technic. To give an example I found with bees walking quietly on the board at an outer temperature of 7 degrees—

- 4 bees with a temperature of 32-33 degrees.
- 2 bees with a temperature of 33-34 degrees.
- 1 bee with a temperature of 34-35 degrees.
- 1 bee with a temperature of 35-36 degrees.
- 5 bees with a temperature of 36-37 degrees.
- 6 bees with a temperature of 37-38 degrees.
- 5 bees with a temperature of 38-39 degrees.

(The degrees given are all centigrade.—Editor).

I suppose that the results below 36 degrees were to be attributed to technical deficiencies.

The temperature of drones was higher, i. e., from 37 to 45 degrees. The temperature of nymphs went to 45 degrees. It was interesting to see that a bee which had been confined in a box of tin-plate during 10 minutes at a temperature of 13½ degrees had nevertheless still a temperature of 31 degrees.

On account of the opposition against my results I was much pleased to hear quite occasionally of a book in the Polish language, published in 1888, by Professor Cisielski, in Lemberg, who died in 1914. This man, an able and diligent investigator, possessed during 40 years an apiary of 300 hives. The book, not being translated into a western language, was quite unknown, which is a great pity, as it proves the deep knowledge of the author and gave some very good experiments. I had the good luck to get the chapter concerning the wintering of bees and their temperature translated.

Already, in 1884, Cisielski declared the **bees warm-blooded**, with an equal temperature of 35 degrees. (We shall see later that his figures are too low). Like others, Cisielski had put a thermometer in the midst of a winter cluster. In a state of rest his instrument showed him 10 to 12 degrees (also too low, as I have explained in the beginning). When he knocked on the hive, the temperature rose in a few seconds to 25-30. He argued that the warmth of a single bee must be higher than 30 degrees, else the temperature of the cluster could not rise so rapidly. The explanation of the fact is easy: At the disturbance the bees move and those around the thermometer are pushed against it and so the bees will give to the thermometer the real temperature between them.

A second experiment is deciding. He wintered a colony on combs, from which he had cut away the lower half, so the bees were obliged to form, beneath the combs, a cluster which hung free into the room. On a winter day, when the bees were quite calm, he opened the hive and wiped quickly a handful of bees into a mortar which he had warmed at 20 degrees. He crushed the bees with the pounder and measured the temperature of the mass. He found 28 to 30 degrees. This experiment is for me of great importance, as it proves that the temperature even of the **peripheral bees of the winter cluster** is at least 35 degrees, if not more.

Finally, Cisielski measured in a direct way the inner temperature of the bee's body. He had an exceedingly minute thermometer, the bulb of which was so little that he could introduce it into the breast of a bee, which he previously had opened with a knife. So he found with a bee which returned at 13 degrees to the hive, 35 degrees in the breast and 25 degrees in the abdomen.

According to these facts, Cisielski says "We see that the temperature of the bee does not adapt itself to the surrounding atmosphere, as with other insects or cold-blooded animals, but it is constant."

I wished to control the figures of Cisielski and procured a very little thermometer of the same maker, who already had furnished the little instrument to Cisielski. Unhappily, he was not able to construct once more so small an instrument and my thermometer got a bulb of 2.3 mm. diameter. That was too large to be introduced into the breast of a bee,

but it was possible to examine with it the temperature of drones.

At first I wished to learn the exactitude of the method. Therefore I killed with cyanic acid a number of drones, which I divided into three groups. In my incubator 5 drones were brought to a temperature of 39.2 degrees, 7 to 43.9 degrees and 5 to 48.9 degrees. Before opening the breast I warmed the thermometer and a very small knife and after this I measured the temperature of the drone. The average figures of the three series are the following:

I caught 14 drones which were going to fly out and the same number of returning drones. The results with both were almost the same. I found, with an average temperature of 29.3 degrees of thermometer and knife, 37.8 degrees and 38 degrees, which correspond, according to the preliminary essay, to 44.5 degrees. With a temperature of 34.0 degrees of thermometer and knife, the two maximum figures were 40.0 and 40.1 degrees, which corresponds to a true temperature of about 48 degrees. We see that those figures agree exceedingly well with the temperatures I found in the electric way.

At last I took 9 drones which had been driven back to the window of the hive. I supposed that their warmth would be less than the warmth of normal drones. The thermometer and the knife were at 32.0 degrees (as an average), the temperature rose to 37.2 degrees, which corresponds to a true temperature of 43 degrees. One of the drones gave

even 39.8 degrees. The difference with normal drones is indeed insignificant.

My investigation proves that the figures of Cisielski, who had not made preliminary essays, are too low. Had he first examined the method with an incubator as I did he would certainly have estimated the normal temperature of the bees about 38 to 40 degrees.

To explain the difference between the real and the found temperature with the little thermometer is not difficult. When we introduce the thermometer, although warmed before, the bulb with the mercury possessing a great capacity of warmth will take at first a deal of the warmth of the surrounding tissues and not before that will the temperature of the mercury rise to a temperature which must be lower than the real temperature.

According to the investigations of Prof. Cisielski and my own essays I hold, therefore, the following thesis:

1. The temperature of the bee's body is independent of the outer temperature and of the state of the bee. It is with the workerbee about 39 degrees, with the drones about 45 to 48 degrees and with the brood about 45 degrees centigrade.

2. The bees have a very acute sense for the temperature of the broodnest and they possess a perfect capacity to regulate the temperature of the broodnest. We ignore the seat of the organs of the temperature, but there is no doubt that they exist.

	Temp. of knife and thermom.	True temp. the drones	Temp. of thermom.	Difference
5 drones -----	30.5 deg.	39.2 deg.	35.6 deg.	3.6 deg.
7 drones -----	29.4 deg.	43.9 deg.	37.4 deg.	6.5 deg.
5 drones -----	34.0 deg.	48.9 deg.	40.6 deg.	8.2 deg.



Visitors at Mangin's circular bee house. The house apiary makes it possible for the beekeeper to work on rainy days.

A LETTER FROM ALGERIA

Friend Dadant:

Many observations recorded in your "Dadant System" are in conformity with my experience. I have had many occasions to ascertain that a shallow super is beneficial because, although the bees always want to put honey above the brood, the queen will go into the upper story and stay there if that upper story is of full depth; in that way the lower story remains empty, for she establishes her breeding above. But when the upper story is shallow, the bees soon fill it with honey and the queen remains below. In our Algerian hive, which is almost identical with the Langstroth, the queen, if at all crowded, will go to the upper full story and remain there.

Why do you not write and publish "The Memoirs of an Old Beekeeper"? Your very long experience, your method of stating facts, without lengthy arguments, your acquaintance with beekeeping on both sides of the ocean, for more than 50 years, would enable you to write very interestingly of the great change in beekeeping and how it came about.

We would like to buy American bee supplies, but the depreciation of European values makes it impossible and transportation is out of all measure. There is practically a Chinese wall between Europe and America. Cannot this be remedied soon?

A. Bernard, Kouba, Algeria.

(I have often been asked to write some sort of record of past and present beekeeping, as witnessed by our three generations of Dadants. I may do it some day, if enough people appear to want it. It would cover very nearly a century of beekeeping. I certainly appreciate such a suggestion, coming from a man of about 60 years of experience, as is Mr. Bernard, who has been, for years, the soul and backbone of the progressive Algerian Beekeepers' Association.—Editor.)

A CIRCULAR HOUSE APIARY

At the time of the meeting of the beekeepers at Green Bay, last August, we visited a circular house apiary owned by one of the most successful honey producers of Green Bay, Mr. F. J. Mongin. As it is quite interesting, both because of the immensely large hives and the method of keeping them, we asked for a picture to be taken, which we now present to our readers. There were some 30 or 40 colonies in the circular house, all facing outward through the walls, as may be seen from the photo. The bottom or brood story of each hive consisted of 19 frames, and supers were put in double row. We counted as many as 11 supers on one hive. Is it to be wondered at that Mr. Mongin is a believer in large hives? The men present in the house apiary are, from left to right, C. P. Dadant, Geo. S. Demuth, Dr. E. F. Phillips and F. J. Mongin, the owner of the apiary.

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

TRANSFERRING AGAIN

What method would be best for me to use in transferring a colony of bees from an 8-frame standard hive into a 10-frame Jumbo hive? Would it be all right to transfer them during the fruit bloom? My idea is as follows: Fill the Jumbo frames with full sheets of foundation. Then take the queen and about a third of the bees and put them in the new hive, in the old one's place. Then turn the old hive with the entrance in the opposite direction and at the end of 21 days shake the bees from the old hive in front of the new one having an entrance guard on to keep out the drones and the new queen. Do you think this plan would be all right? I have no empty combs for the Jumbo hive. Would you give them all of the frames of foundation at once, or as fast as they needed it? Would it be all right if, in the start, you put the queen in the new hive, put on an excluder and put the old colony above? Also, have an entrance guard on the new hive and then, after 21 days, take off the old hive and shake the bees off on the step of the new hive below? Would this plan work?

IOWA.

Answer.—A still better way would be to transfer each comb containing brood into a Jumbo frame, adding a strip of foundation to fill up the empty space above. Then you could reject all drone comb and would have the brood where the bees could take care of it. The trouble with most methods is that they try to give you short cuts; the brood is left away from the bulk of the swarm at a time when they still need care. Unless you wait till very warm weather, you will run some risk of the brood being chilled, or if the bees take care of it, there may not be enough bees left in the other hive to take care of the queen's new laying.

Your last suggestion is the best of those you mention. Put the brood above with an excluder between and take the hive away 21 days after. Give the colony full sheets of foundation to begin with.

When we transferred bees, we took a great deal more trouble than they do now—days, but we had a much better job.

HONEY IN RADIATORS

I read the articles in the Journal on honey as radiator anti-freezer and wish to say that the beekeepers are spreading destruction to themselves if they try to introduce honey as anti-freezer for the cars. The diseased honey will be spilled over all the country roads from leaky radiators and our colonies will be wiped out in a year or two.

Empty cans of diseased honey will be dumped out for the bees to help themselves. My advice to the beemen is to be careful about advocating it for anti-freezing purposes. It does not fill the bill for lower temperatures than zero, anyway.

We had a hard time to get rid of the small beekeepers, for they were the ones to infect our bees, and now, when they are gone, we shouldn't invite still more enemies to spread the disease to our bees.

I wish this be given deep thought. Let us think before we leap. MINNESOTA.

Answer.—It is all right to sound a note of warning, for the man who is warned is fore-armed.

However, we wish to call your attention to the fact that, in order to have a good mixture, as you will see by paragraph 6 on page 15 of the January number, we found it necessary to put in much more water than needed and boil it down. This boiled mixture will have the advantage, as stated

in paragraph 8, of, destroying any germs that might be present in poor honey.

Besides, you must remember that we are in a wasteful country, and that most of the time honey is left in vessels thrown away. So we must devise means of keeping disease away, while honey is being sold everywhere, some of which is of inferior quality.

Two-thirds honey and a third water appears to be able to withstand almost any temperature if the mixture has been made by boiling it down.

(Bees don't fly much when it is cold enough to need honey in the radiators. Honey spilled in winter is likely to be gone before summer. Anyway, it is likely to be boiled in the radiator.—F. C. P.)

QUEENLESS BLES

I had 4 swarms of bees queenless last summer, they had queen cells; when the queen hatched out the following day the queen was lying dead in front of the hive; they had no drones or worker layers; they did this throughout the entire summer until October, whenever they had a queen. Please tell me what to do in this case and how to avoid it. It was very discouraging.

WISCONSIN.

Answer.—Bees usually rear a number of queen cells, and all the queens that hatch, but one, are killed. So this would be normal. But if, in your case, the queens were all killed and the hive remained queenless, then there is something abnormal about the matter, which is unintelligible to me, for I have never seen it, except where there was a drone-laying worker or an old worn-out queen. Usually, in the latter case, the queen is disregarded and the young queen is reared.

MOVING BEES—HEATING HONEY

I am going to move my bees in the spring one half mile. This will be my first attempt.

1. Can I move them before blossom time, or shall I wait for the early blossom?
2. Would you face hive south, or east?
3. Can I move them any time of the day?
4. Shall I leave the hive shut over night, before moving?
5. When moved, how long shall I keep them closed?

6. Shall I wait until I have them all moved, then open them up, all at once, or shall I open their hive as soon as moved?

7. Can you tell me where I can buy honey heaters?

8. Can you tell me where I can get instruction on heating honey? OHIO.

Answers.—1 to 6. Move them upon a day when they will be sure to be able to fly. Close them up the evening before and move them in such a way that, as soon as released they will be able to have a flight. Transporting bees jars the colonies enough to make them feel in a sort of swarming condition. When you release them right after arrival, they come out in rather tumultuous numbers and look around. If you place a slanting board in front of each hive, they will at once notice that their hive is not in the same place as before, and they will make themselves acquainted with their new home location. In such a short distance from the old location, some of the old bees will be likely to go back, because they have so often returned home from the fields.

If possible, face them south, southeast or east, any direction but north.

If you have two or three weak colonies, you might leave them on their stands till the others are all moved. Then those old bees which have insisted on returning to the old stand will be more likely to stay, at the second trip.

7 and 8. The average beekeeper does not buy any particular outfit to heat honey. In fact I do not know whether such outfits are made for sale. If your honey is in 60-pound cans you may heat the honey in them, by placing one or more of them, according to need, in a large boiler with water, and some blocks of wood or strips under the cans to raise them up from the bottom. Do not heat the water to the boiling point if you do not wish your honey to lose its good flavor.

The longer you will keep your honey hot, the darker it will become.

The less heat you give, the more it will retain the essential oils which produce flavor, therefore the better it will remain.

The quicker you cool it, the less color it will get.

Any honey that has been heated is darker in shade than honey in its natural condition.

PARALYSIS

I sent you two questions on increase last year. I followed your answers and I had wonderful success. So I feel you can be of great service in helping me handle this disease. With many thanks for your kind help.

1. I have a curious bee disease; it started about the middle of last July. The bees would come out, one or two at a time, looking as if they had been dipped in grease, black and shiny looking. The bees seemed to try to carry them away by pulling them about. The diseased bees would hop about in the grass. From what I can learn from reading the bee books it seems to be bee paralysis. They claim it doesn't spread, but it went from one colony to another, weakening the bees until the robbers commenced on them.

I would like to know if it will appear next spring, as I don't see any signs of it now. Also how it can be controlled? I have pure Italian bees.

2. Do you think it will be all right to use combs next spring that come from colonies affected with this disease? VIRGINIA.

Answers.—Many thanks for your praise. We hope to deserve it again.

1. The disease called paralysis, May disease, vertigo, Isle-of-Wight disease, appears here and there all over the world. Whether it is to be divided into two or three different diseases remains to be ascertained. They have already found two causes, acting somewhat in the same way: Nosema apis, which invades the intestines of the bees, and Tarsonemus woodi, which invades its breathing tracheal bags and ducts. There may be other causes, and it looks very probable that whatever the disease be, it is first induced and later increased, by moist conditions, after some confinement of the bees. We have had it diagnosed in Southern California, in Florida, in the North, here at home, in Italy (Ancona), in France as early as 1856, and worse than anywhere else in the British Isles. As was at one time asserted by a Belgian apiarist, it may turn out to be one of three different diseases. The worst of all was the Isle-of-Wight disease, which is now about proved to be caused by the mite Tarsonemus woodi. This mite, our scientists say, has not yet been found in the United States, and for that reason they have had a Federal law passed to prevent the importation of bees from any country but Canada.

We do not know of any positive cure, though the late Mr. Poppleton reported success by sprinkling the bees with powdered sulphur, which killed all the diseased bees and stopped further spread. The Italians have given, as a preventive, a food made of

honey mixed with a tea of lavender, ginger, rosemary, savory and other aromatic plants having tonic properties.

2. We have not found that the disease was reproduced, when once cured, by using the combs of diseased colonies. Neither has it reappeared periodically. So we believe that you need not be afraid of it if it has disappeared. It may not return for years. You could find, in the old bee magazines, frightened warnings concerning it, by people who had lost many colonies from it and later forgot its existence.

As we are all more or less in the dark as to the exact cause and especially as to a sure preventive or a sure cure, I would recommend, if it appears again, that you send a number of live bees from the diseased hives to the Bureau of Entomology at Washington. If you have any good microscopists in your vicinity, let them study it too, for bees that are sent away may not show the disease as plainly as if taken right out of the hive and examined.

(I have had best success from requeening diseased colonies. It reappeared in one colony in my yard three successive years until new stock was introduced, after which it failed to show up again.—F. C. P.)

DISEASED COMBS

Last spring I bought some 3-frame nuclei that I received on May 20th. About the end of June, in making my weekly visit, the brood of these nuclei looked suspicious. In the beginning of July the disease appeared; in each one, I found cells of American foulbrood. On the 17th of the same month, before the crop stopped, I shook all the bees of these sickly hives into new ones and the bees were obliged to build their cells from foundation; at the same time I changed the queen of each hive. Later I looked several times and the disease has not yet reappeared. There is no disease here.

Among the hives in which I found American foulbrood many had supers of honey that I extracted the last of all; do you think that I can use those combs, that are new, without danger?

What do you think of that breeder who announces in many journals of beekeeping as having no disease? Perhaps himself has no disease; but his bees—?

Canada.

Answers 1. Opinions differ as to whether combs may be used safely. I believe there

are instances where they would be safe to use. But inasmuch as there is no disease in your part of the country, I would urge you to melt up those combs. It will be but little loss compared to the possible return of the disease in your apiary.

2. Queen and bee breeders in the South are required to furnish all sorts of evidence of their good faith and of the health of their apiaries. But some dishonest ones manage to get advertisements. Please give us the name of your breeder, so we may make an investigation and give him a warning. It is indispensable that beekeepers and all honest breeders be protected by the weeding out of the dishonest ones.

EXCESS OF POLLEN—SWARMS

1. I have about 40 colonies of Italian bees, about half in 10-frame hives and the others in 13-frame hives, and it looks as if they will fill the brood chamber with pollen. Some of the 13-frame hives have as many as 3 frames solid with pollen on both sides, and some scattered through other frames also. The colonies in 10-frame hives are about as bad. Pollen is very plentiful here, and on a warm day in June bees can be seen entering the hives with pollen, and throughout the spring and summer it seems as though it was coming in on wagons instead of wings. Can you tell me of any way to get it out of the combs? To melt up the combs is rather expensive, but it is the only way I see.

2. When a swarm issues from a hive and all queen cells in the parent colony are filled and a cell from another colony put in; that cell will hatch several days before those which the bees build when the first batch is destroyed. Do the bees cast a second swarm as soon as the first virgin emerges, or do they wait until there are several virgins before an afterswarm issues?

ALABAMA.

Answers.—1. The excessive storing of pollen is something that we are not accustomed to in the North and Middle States. Usually the only hives that store an excess of pollen are those whose queens are not sufficiently prolific. Queenless hives sometimes store too much pollen. Perhaps if you made the hives queenless by dividing and leaving the queen and the old bees on the stand and removing the colony to a new spot, they would use up the pollen, or most of it, rearing the young brood. Or perhaps you might remove the hive with its queen

to a new spot and give the old bees a new queen on the old spot. In that way, the colony, having no field workers for a few days, would consume the excess of pollen in breeding. But you should make sure that they have enough honey to keep up breeding. If you try that method and it is successful, please let us hear from you. Otherwise I see no way to get rid of the pollen but to melt up the combs.

2. The bees cast the second swarm from three to seventeen days after the first swarm is cast. But these are the extremes. The usual time is about 8 or 9 days after the first swarm or two or three days after the first queen hatches. It depends upon the eagerness of the workers and of the young queen, whose ire is raised when she finds that other queens are being raised. Read paragraphs 444 to 450 of the Langstroth-Dadant book, "The Honeybee."

MOLDY COMBS

In the fall I fumigated my supers with carbon disulphide to keep down moths, putting a few layers of newspaper between each super to make as nearly air tight as possible. Owing to lack of storage space, and expecting to make a change in location at most any time, I left supers in the beeyard. Later showers dampened the newspapers I placed between the supers, with result that the combs are badly mildewed. Will the bees clean these up when given to them in the spring, or would you advise cutting them back to mid-rib or about center of combs and endeavor to have them rebuild these combs. This is my first experience with mildewed combs. OKLAHOMA.

Answer.—Unless the combs are in worse condition than I would expect after a few weeks in the dampness, I believe the bees can cleanse them, if not given to them until the hives are very populous.

I would advise you to put those combs in a very dry room, with plenty of ventilation. After they get dry, you can better tell whether the bees will accept them. If they are just mildewed, it is quite probable that the mildew will mostly disappear when they dry up. Then just give a case of the most mildewy to a strong colony, in May. I believe they will cleanse them. I have often had very mouldy combs cleansed in this manner.

HUMMER NUCLEI AND QUEENS

Book your orders now for our nuclei and package bees and get bees and queens that will make you money this season.

1923 PRICES F. O. B. MACON, MISS.

2-frame nuclei and untested queen, \$4.25 each; 25 or more, \$4.00 each.
3-frame nuclei and untested queen, \$5.25 each; 25 or more, \$5.00 each.
2-lb. package bees and untested queen, \$4.50 each; 25 or more, \$4.00 each.
3-lb. package bees and untested queen, \$5.50 each; 25 or more, \$5.00 each.

Ten per cent books your order, balance just before shipment is made. We have been breeding our bees and queens here for over 30 years for the best and we invite comparison of Hummer bees and queens with others in every respect; also as to the excellence of our nuclei and packages as to quality of brood and bees in each package. Carefully packed to go through safely, and we replace bees or refund money, at your option, if any loss occurs, on receipt of bad order slip from your express agent, 800 strong colonies to draw from. Cypress bottom Boards and one-piece Covers. Write for prices.

GEO. A. HUMMER & SONS,
Prairie Point, Miss.

TENNESSEE-BRED QUEENS

Fifty-one Years' Experience in Queen-Rearing
Breed Three-Band Italians Only

	Nov. 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12
Untested.....	\$2 00	\$ 8 50	\$15 00	\$1 50	\$ 7 50	\$13 50	\$1 25	\$ 6 50	\$11 50
Select Untested.....	2 25	9 50	18 00	1 75	9 00	16 00	1 50	7 50	13 50
Tested.....	3 00	16 50	30 00	2 50	12 00	22 00	2 00	10 50	18 50
Select Tested.....	3 50	19 50	35 00	3 00	16 50	30 00	2 75	15 00	27 00

Select tested, for breeding, \$7.50.

The very best queen, tested for breeding, \$15.

Capacity of yard, 6,000. I sell no bees by the pound or nuclei, except with high-priced tested and breeding queens.

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

JOHN M. DAVIS, Spring Hill, Tenn.

EARLY BREEDING

Last fall, when putting my bees down for the winter, I came across a light colony, and placed it where I could readily feed them this spring, which I did on the 16th day of February, 1922. The bees were taken out of the cellar and placed on their winter stands March 16th; they had two fine days for flight. On Sunday, March 18, we had quite a snowfall, and cooler weather followed, so the bees did not get a flight until yesterday, March 23. Knowing they were not in the best of shape in regard to stores, I went to examine them and, to my great surprise, found larvae, sealed brood and young bees that had just emerged from the cells.

While the larvae and sealed brood were found on one (1) frame only, and not a great deal at that; on one side it would measure about 3x3 inches, while on the other side it was about 2x2 inches.

I could hardly make myself believe it, but it is there for anybody to examine. As it is my first time to experience such a thing under such conditions, I would like to know if any others have had such experience.

One thing I forgot to mention is the temperature of the cellar, which varies from about 50 to 65 degrees most of the time.

WISCONSIN.

Answer.—This is not an uncommon occurrence. It is due to this light colony having been fed some time before, and also to the disturbance in removing it from the cellar. Such a colony is by no means safe when out of the cellar, unless there are no drawbacks. By the time this will be published you will know whether it is to live

through its experience. We have often known light colonies to raise a little brood and die shortly after, when the spring is backward, because many of the field workers die in going after water for brood rearing during chilly days.

You would probably find larger patches of brood in the strong colonies, after taking them out of the cellar, and I remember hearing Canadians speaking of frames of brood found in colonies at their removal from the winter repository.

MOTHS

Please tell me how much of bisulphide of carbon to use to every 10 frames of comb to keep moths out. I have 50 frames I would like to keep for new swarms.

ILLINOIS.

Answer.—According to the experiments of Prof. F. B. Paddock, made in Texas in 1918, it would take about 12-3 ounces for 5 ten-frame full stories, of bisulphide of carbon, to kill the worms or the moths. If there were eggs in the combs, the fumigation would have to be repeated a few weeks later. However, there would probably be no eggs at this date.

Remember that this would not keep moths away permanently, for the sulphide evaporates. But if the boxes are placed in a well

closed room or in a closet, there will be no longer any danger of moths, no matter how long you keep them.

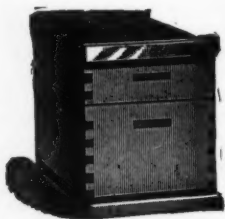
BEES FIGHTING

is robbing going on in a latent or concealed way. There may also be some occasion for a few bees to enter into premises containing sweets, or they may be robbing some

I have noticed on the alighting board of one of my colonies since the bees began to fly this spring, several pairs of bees seemingly fighting. I at first thought it was the live bees taking out the dead ones, but afterwards, and every good day since, have noted that the bees—sometimes there would be 3 in the fracas—were very much alive; sometimes there seem to be two tackling the one and they take it to the edge of the board and "throw" it off. I am inclined to think it is robbing, or attempt to rob. The colony is quite strong and carrying pollen today; there seems to be no excitement among the bees generally as in a "regular" case of robbing.

CONNECTICUT.

Answer.—It is very probably what you surmise, an attempt to rob. Perhaps there colony among the neighbors, where you cannot see it. Usually such fighting ends with the first fruit bloom. It is well to narrow down the entrance of a hive where such fighting is noticed, until they become stronger in numbers.



MR. BEEKEEPER—

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *Write for free illustrated catalog today*

We pay highest cash and trade prices for beeswax

LEAHY MFG. CO., 90 Sixth Street, Higginsville, Missouri

J. W. ROUSE, Mexico, Missouri Texas Distributors, A. M. HUNT & SONS, Goldthwaite, Texas



For years we have been shipping thousands of pounds of bees all over the U. S. and Canada

Order Direct from this Ad.

We are prepared to take care of your rush orders

- 1-pound package bees, \$3.75 each, 25 or more, \$3.60 each.
- 2-frame nuclei same price as 2-pound packages.
- 3-pound package bees, \$5.25 each; 25 or more \$5.00 each.
- 3-frame nuclei same price as 3-pound packages.

QUEENS FREE when 25 or more packages are ordered. For less than 25 lots, add the price of queen wanted.

Untested queens, \$1.00 each, 25 or more 85c each, \$70.00 per hundred.

This is a special SALE on untested queens of high quality.

Select untested, \$1.70, 25 or more \$1.50 each.

Select tested \$2.65 each, 25 or more \$2.25 each.

Tested \$2.25 each, 25 or more \$2.00 each.

Breeders \$5.00 to \$15.00.

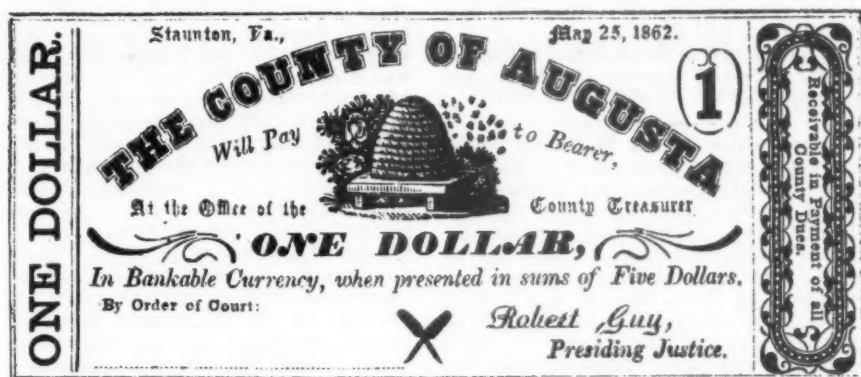
ITALIAN

CARNIOLANS

GOLDENS

NUECES COUNTY APIARIES, Calallen, Texas





An interesting relic of other days. This is one of the few cases where a beehive has appeared on an official document.

Honey Habit

The custom of referring to the time immediately after one's wedding as a honeymoon descended from the ancient tribes of Central Europe. Newly married couples drank and served to their friends wine made from honey gathered during the first thirty days (or lunar month) after the performance of the wedding ceremony.

After persisting for several hundred years, this custom finally died out, but its significance remained, particularly as the serving of the honeyed wine was succeeded by the practice of married couples leaving their homes for a varying length of time. For this reason the trip which follows the marriage ceremony is now

known as a honeymoon, though it has nothing to do with wine, and generally lasts less than a month.—London Tit-Bits.

Dedicating the Miller Memorial Library

The beekeepers of the United States and Canada should begin now and plan a vacation trip for the week of August 13 to 18 when the dedication ceremony for the Miller Memorial Library will be held at Madison Wis. and at Marengo, Ill., on August 18. This will probably be the most important meeting held in the United States for a number of years and it will be well worth while for all of our beekeepers to attend.

H. F. Wilson.

Skeps in Designs

Mr. Harold L. Kelly, a good subscriber from Washington, D. C., has written to call our attention to the fact that the State of Utah has a straw skep in the design of its seal.

Furthermore, he encloses county script to the amount of \$1, issued by Augusta County, Virginia, which has a skep at the center. This curious relic is reproduced herewith.

A New Kink in European Foulbrood Treatment

Mr. E. S. Miller, of Valparaiso, Ind., has an effective way of treating a few cases of European foulbrood. He kills the queen of the colony having the disease and in ten days destroys whatever queen cells may have been built, and sets the European foulbrood colony over a strong colony of Italian bees with a newspaper between. In other words, he unites them with a strong colony. The disease is, of course, at once cleaned up, because of the greatly added strength, and the combs are made sweet and clean again. Later, if desired, a division can be made and a new queen given.

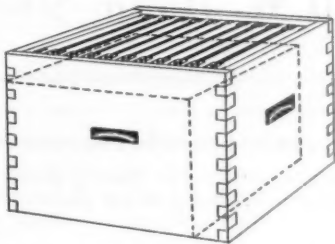
Bee Inspector for Kentucky

Mr. A. H. Newman, of Morgan, Ky., has been appointed bee inspector under State Entomologist H. Garman, who has supervision of the inspection of apiaries, in compliance with the foulbrood law recently passed by the Legislature requiring that all bees be inspected.

MAKESHIFTS vs. CORRECT DESIGNS

A substitute has become known as proof of quality in goods substituted for. Leading beekeepers tell us substitutes being offered are proof that thinking beekeepers are daily accepting the

— MODIFIED DADANT HIVE —



Compare 10-frame and Modified Dadant equipment in results. Send \$5 for 1 hive KD. delivered within 4th postal zone of cities named below. You get "Beware" quality, standard for 49 years of progress.

Quinby depth frames offer adequate food and brood room in one body. Eleven frames spaced 1½ inches were proven by years of experiment with hundreds of colonies by Dadant, to aid swarm control, with adequate supering.

Embodies Proven Essentials

This hive is a real economy. Large hives have been used south and north for years and succeed, with proper management. Quantity users of Modified Dadant hives everywhere compare them enthusiastically with other equipment.

Send for Free Booklet.

**G. B. LEWIS COMPANY, Watertown, Wisconsin, or
Albany, N. Y.; Lynchburg, Va; Memphis, Tenn.; Wichita, Kansas.**

Our Basswood Supply

Bulletin 1007 of the U. S. Department of Agriculture, has for its title "Utilization of Basswood." It contains 64 pages well illustrated and was written by Warren D. Brush, Scientific Assistant of the Forestry Service.

According to the report, basswood is the 20th kind of lumber in point of amount used in the United States. The total visible amount of basswood lumber is nine billion board feet, of which about 250 million feet are being used annually. The Lake Regions contain about 55 per cent of the total available basswood, with the Central States Region second, with 25 per cent and the Southern Appalachian Region third with 7 per cent. However, the basswood in the Central States is so scattered that the first two regions in point of available supply are the Lake Region and the Southern Appalachian Region.

The report goes on further to show that in cutting basswood about 25 per cent goes into first and second, 30 per cent into No. 1 Common, 25 per cent in No. 2 Common and 20 per cent in No. 3 Common.

When we realize that basswood for sections must be of the very highest grade and realize also that at the present rate of consumption our supply of basswood would only last 36 years in case no more were grown, we can see that there is very little possi-

bility that prices of basswood sections, etc., will drop.

The report is very comprehensive, and interested parties should secure a copy.

Opportunities at the Mid-West Show

It was my pleasant duty in November to attend the meeting of the Mid-West Horticultural Show at Council Bluffs, Iowa. While this is primarily a horticultural exposition and therefore, for the most part composed of displays of fruit, flowers and vegetables, it is also a show at which beekeepers over a large territory have splendid exhibits. Representing, as it does, the entire Middle West, it seems as though beekeepers should more fully recognize and take advantage of the opportunities offered by the show for competitive displays.

During the past year we have attended several state fairs, and I think I am correct in saying that the showing made by the beekeepers at the Mid-West was equal to anything which we saw anywhere else. We were impressed, however, with the idea that beekeepers were not taking sufficient advantage of the opportunity offered and somehow it should be conveyed to the beekeepers of the Middle West that this exposition is the finest chance they will ever get to display their products to advantage. There is an advertising value here which should not be neglected.

The Mid-West Horticultural Show is held every two years, and I under-

stand that Cedar Rapids is making a bid to have it next time. I have never attended an exposition which was more beautiful and the displays of fruit, flowers, nuts and honey, dressed as they were in appropriate light and trappings, certainly made a vivid impression on the spectators.

Our friend, F. B. Paddock, Professor of Apiculture at Iowa Agricultural College, Ames, Iowa, was in charge of the honey exhibits. There were many features of unusual attractiveness. Since the last show the interest of the beekeepers has been greatly increased and the exhibits of honey and beekeeping equipment were 4 or 5 times larger than in the previous show. There was also a noticeable increase in the interest from outside of the state, and quite a few exhibits were sent in from beekeepers in Illinois and others of the Middle States. The management of the show is enthusiastic over the splendid success of the honey exhibits and is hoping that a much greater attempt will be made on the part of the beekeepers at the next show, to be held in 1924.—G. H. C.

Lorain County, Ohio, Meeting

The Lorain County Beekeepers' Association has recently been formed affiliating with the State Association. The Secretary of the Lorain County Association is Mr. Eber M. Vincent, 626 W. Main St. Wellington, Ohio. Beekeepers in this vicinity please note.

CHICAGO

FOR QUALITY
FOR SERVICE

CHICAGO

When you get ROOT QUALITY BEE SUPPLIES from the greatest shipping center in America you get SATISFACTION. You get a superior grade of goods in QUALITY and WORKMANSHIP. Trains leave Chicago daily with connection for your station.

Write for our new free 1923 Catalog.

Let us quote you on your wants.

A. I. ROOT CO. OF CHICAGO, 224-230 W. Huron Street
CHICAGO, ILLINOIS

HONEY

Beekeepers who have sold their own crop and have a steady trade for Honey should buy Honey to fill this demand. It helps to keep their own customers from going elsewhere and also tends to keep Honey prices stabilized.

White orange ----- In 60-lb. Tins, ----- 12c lb. White sage ----- 12c lb.
Extra L. A. sage ----- 10 1/2c lb.

GLASS AND TIN HONEY CONTAINERS

2 1/2-lb. cans ----- crates of 100, \$4.50
5-lb. pails (with handles), ----- crates of 100, \$7.00
10-lb. pails (with handles) ----- crates of 50, \$5.25
60-lb. tins, 2 per case, new, \$1.20 case; used, 25c.

White Flint Glass, with Gold Lacquered Wax Lined Caps

8-oz. honey capacity ----- \$1.50 per carton of 3 doz.
16-oz. honey capacity ----- \$1.20 per carton of 2 doz.
Quart, 3-lb., honey capacity ----- .90 per carton of 1 doz.

HOFFMAN & HAUCK, Inc., Woodhaven, New York

QUINN'S QUEENS of QUALITY

Have no superior, "There's a reason"; are Mendelian bred, good qualities accentuated. GRAY CAUCASIANS, GRAY CARNIOLANS, GRAY LOWER AUSTRIAN queens; also CYPRIANS, the 3-banded yellow bee. Queens imported in 1922, insure extreme vigor. Laws of heredity strictly observed. My queens are produced by selective breeding, in accord with these laws of nature that must be understood and applied before the best can be had. And is found only in Quinn's Quality Queens. A trial will convince YOU of their value, as satisfied patrons testify by repeat orders. Internationally known the world over.

CHAS. W. QUINN

Powhatan, Va.

BEEKEEPERS

I am putting my name and address in this space to tell you that I am making cypress beehives and cypress supplies such as hive-bodies, covers, bottom-boards, and other items for the beekeeper. I want an opportunity to figure with you on your wants. Prices and goods right. Ask for my prices.

J. TOM WHITE, Dublin, Ga.

My April Queens Produce the Bees THAT WILL GET YOU BUSY

Hustling Three-band Italians:

Untested \$1.00
100 untested 90.00

No Disease.

D. W. HOWELL, Shellman, Ga.

THE STAPLETON APIARIES

Three-banded Italian bees and queens.

Untested queens \$1.00 each
Tested queens 1.50 each
1 lb. package bees, with untested queen 3.00 each
2-lb. package bees with untested queen 5.00 each
3-lb. package bees with untested queen 6.00 each
10 per cent discount on orders of \$25 or more. Safe arrival and satisfaction guaranteed. No disease.

**N. L. STAPLETON,
Colquitt, Ga.**

FREE—Copy of The Southwest Magazine will be sent on request of special interest to those desiring to know about opportunities open in the great Southwest for the Farmer, Rancher, Homeseeker, Business man, Tourist, Sportsman and Investor. Southwest Magazine, Hicks Bldg., San Antonio, Texas.

FRENCH EDITION

Dadant System of Beekeeping

By C. P. Dadant

Mr. C. P. Dadant has translated the "Dadant System of Beekeeping" into French, and this book is now out and ready for distribution. It is cloth bound, well illustrated, and we recommend it to anyone desirous of obtaining his bee books in the French language. Price \$1.00.

Address American Bee Journal, Hamilton, Ill., or Comptoir Apicole Quebecois, Levis, Quebec, Canada.

White Leghorn CHICKS

Write Quick. Free feed—Liberal Discount on early orders: World-Famous 265-270, and 280-326 egg strain trapnested, pedigreed English American S.C.W. Leghorns. Heavy Layers. Best Payers. Strong healthy chicks, 100% live delivery guaranteed. p.p. Big valuable catalog Free. **HEWLIN'S GRANDVIEW POULTRY FARM, Box 21 Center Hall, Pa.**



Booking Orders for May Delivery 1923

My introduced-laying-enroute queens and packages. One good, vigorous, young queen, one standard Hoffman frame of emerging brood and adhering bees, and one additional pound of bees. Price complete f. o. b. Bordeloville, \$5.00.

Additional frames of brood, or additional pounds of field bees to make larger package, \$1 each, respectively in above packages. Bees and queen Italians. Queen introduced and laying enroute to you. Health certificate attached. Safe arrival and satisfaction guaranteed. One-fifth cash books order. Send for circular and names of satisfied customers in your state. Complete references given.

Jes Dalton, Bordeloville, La.

ROOT QUALITY

BEE SUPPLIES

**FULL STOCKS PROMPT SERVICE
A. I. ROOT CO., of N. O.
2042 Magazine Ave., New Orleans La.**

Also headquarters for Elton Warner's three-banded Italian Queens, Nuclei and Combless Packages.

One Elton Warner Quality untested queen, one frame emerging brood with adhering bees, and one pound of young vigorous bees, price \$5 f. o. b. New Orleans. Extra bees, \$1 per lb.

3-frame nucleus, with Elton Warner Quality untested Queen, price \$5.50 f. o. b. New Orleans

Combless packages, \$1 for package, plus \$1 per pound for bees, and price of queen, if queen is wanted.

Young, vigorous **TESTED** Elton Warner Quality Queens; wonderful honey-gathering strain for **EARLY** spring shipment. \$1.60 each, postpaid.

Untested Elton Warner Quality Queens, After April 10, \$1.15 each, postpaid.

Everything guaranteed, including delivery date. No disease; 20 per cent books order; 10 per cent discount on orders of over \$20; 15 per cent discount on orders of \$60 or over.

Almacen de exportacion para Mexico y Centro America. Correspondencia en castellano.

Fire Loss in Ontario

Our readers will probably have read, in the daily papers, of the big fire which occurred in Northern Canada some time ago and in which many lives were lost and much property destroyed.

The Ontario Beekeepers' Association, at their annual meeting in December, took up subscriptions for beekeepers who were caught in this fire. The following letter from one of our subscribers, however, gives a realistic description of the plight of many beekeepers and homesteaders in this northern country:

"I suppose you read about the big Temiskaming fire. Well, I was in the midst of it and got cleaned out of everything except the clothes on my back and some stock. You can guess how bad it was, as our township is six miles square and 160 acres in a lot and 96 farmsteads burned out in that area and 18 casualties, including my brother, his wife and two sons aged 17 and 19 lost their lives. It was a perfect tornado of fire and the strongest wind I ever saw. I had 100 acres of bush and all the big trees were either uprooted or broken off, spruce trees 2 feet through, even the fence posts in the wire fences are three-quarters of them burned off to the ground. Of course the next day after the fire carloads of provisions, clothing and feed for stock were rushed in, also tents and lumber from old Ontario. United Farmers of Ontario are sending in hay, oats and sleighs by the carload, also sewing machines and clothing. We had 8 cars to unload at Heaslip Station last week, all donated, and we will need a lot, as all pastures are burned and will have no local feed until spring crops grow tall enough to mow. I lost all my bees and everything belonging to them, but I intend starting again if I can raise the dough, as it will take a lot to get going again fixing up fences, buildings, implements, harness, etc."

**Jos. L. Heaslip,
Heaslip, Ont., Canada.**

Propolis Poisoning

In the July issue "Iowa" inquires "What will cure propolis poisoning?" There are many infallible remedies for this, but the simplest is to make a solution of 1 teaspoonful of concentrated lye and 1 quart of boiling rain water; wash the parts exposed to the propolis before handling it; also wash with the solution after work, adding a little good soap. A tea made from *Grindelia robusta* is also excellent. This plant grows in the western part of both North and South America.

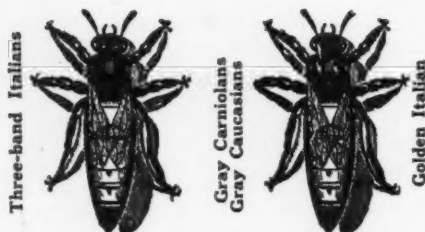
**Alfred Carling,
California.**

BEEES — ITALIAN BEEES — BEEES

Full colonies with Italian queen at \$15.00 3 for \$30.00.

3-frame nucleus with Italian queen at \$6.00.
3-lb. package with Italian queen at \$5.50, 5 at \$5.00.

No disease. Safe arrival and satisfaction guaranteed. **Van's Honey Farms,
Van Wyngarden Bros., Props., Hebron, Ind**



Pure stock and satisfaction guaranteed. Prices, Carniolans and Caucasians, untested, \$1.25; tested, \$2. Italians and Goldens, untested, \$1, tested \$1.50. Circular free.

GRANT ANDERSON,
Waco, Texas, Route No. 2.

Bees and Queens

Your satisfaction guaranteed. Send us your order.

Queens, untested, \$1.25 each, \$12 per dozen.

Bees, 1 lb. with untested queen, \$3
2 lbs. with untested queen, \$5.

All mail charges paid.

E. A. SIMMONS,
Greenville, Ala.

PURE BRED CARNIOLANS

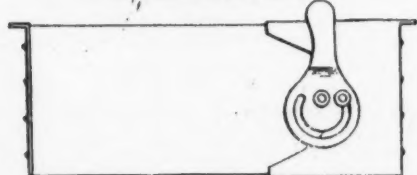
are hardier, gentler, much more prolific and are better honey-gatherers than Italians. Highly disease-resistant, longer-tongued build up more quickly in the spring, build snow-white comb, and as winterers they are unexcelled.

Our Carniolans are bred from stock we imported direct from Carniola. **They are pure.** In buying Carniolans it is very essential that you take this into consideration.

WRITE for our circular, which gives you more fully the merits, management, prices, etc., of our Carniolans. It also gives you some accurate information on the other different races of bees—information you have long looked for. **IT'S FREE FOR THE ASKING.**

W. A. HOLMBERG,
Denair, Calif.

The Bowers Adjustable Division Board Adjustable to Length



Patented June 27, 1922.

Not a dissatisfied purchaser so far.

Made to fit any size of hive. It's warranted. Circulars, prices, etc., free on request.

F. D. BOWERS, Sugar Grove, Pa.

Dry in California

We are having an unusually long spell of warm weather for February. We have not had a good rain for some time and have not had over half of the rainfall that we had last season until this time, and unless we should have good late rains, there will not be much of a honey season, so I am in hopes of sufficient late rains to insure a crop.

Reports sent out of good prospects are premature, as we never can be certain until the desired amount of late rainfall. Now the weather is beautiful, but we may have a cold, unfavorable March. The seasons have greatly changed since the 80's and 90's.

M. H. Mendleson,
Ventura, Calif.

Wyoming Gets Busy

A letter from G. H. Buffum, Secretary of the Sheridan County Beekeepers' Association, located at Sheridan, Wyoming, states that the Wyoming beekeepers are aroused to the need of adequate laws to protect and further their industry and are taking steps to try to get a law through the present Wyoming Legislature which will provide for inspection of diseased bees and also for a state inspector.

Net Weight Requirements in New York State

Mr. W. T. White, Director of the Bureau of Weights and Measures, Department of Farms and Markets at Albany, N. Y., is authority for the statement that his bureau "contends that it will be sufficient if the case holding combs of honey is marked with the number of combs it contains. We do not require that each individual comb be marked as to the amount of net contents."

The Federal law, however, requires that all comb honey which goes into interstate commerce must have the net weight stamped on every section. One ounce must be deducted from the total weight for the wood of the section, in order to get the exact weight. It is not sufficient to mark the sections "Not less than 12 1/2 oz." or "14 oz.," but each section must have its own weight stamped on within an error limit of 1/2 oz. On the shipping case should be stamped the number of sections.

Talk Sells Honey

Our good friend, Mr. O. G. Borton, of South Dakota, has just informed us that a day or two after the delivery of a talk on honey by Dr. F. C. Ameiss, of St. Louis, over the radio, Mr. Borton got an order from one of his home town people for a case of comb honey, which started a new customer. The party in question stated he had not realized the value of honey as a food until he heard Dr. Ameiss' talk over the radio. Who says advertising is no good?

A Beekeeper Claims Insurance

The Insurance Press for January 17, 1923, gives the following report of a Japanese beekeeper who recently sent in his claim to the Home Fire and Marine Insurance Co., in the following letter:

"I got fire Bee house day before yesterday night, all burnt them down about halfpass nine oclock OK. I was in town to get magicine for wife and Jimmie fined fire about 8 o'clock, but to late already then, but luck that none hurt my bee, and house, also this granary, about 1-3 of them bee supply goods I bring those to top the barn as bee house is not big enough to put in all them too much stuff and no room to have them bee work in all winter and make ready for the next summer, and I do not use them in this summer anyhow, they left, that is great luck to me for this summer, sorry to report as above inst."

At least this Japanese beekeeper was probably far ahead of most beekeepers who, we are inclined to think, carry no insurance whatever.

Colorado Firm Well Known

Mr. Frank Rauchfuss, of the Colorado Honey Producers' Association, has just enclosed in one of his letters to us an envelope which was addressed to his firm as follows: "Delicious White Extracted Honey." Denver, Colorado. Evidently the postman knew where this delicious honey could be obtained, as Mr. Rauchfuss got the letter.

Losses in Lake Okeechobee Flood

In our January number we mentioned the high water on Lake Okeechobee, in Florida. A letter from Mr. C. C. Cook, owner of the Palm Apiaries, of more than 800 colonies, states that they lost nearly a hundred colonies and that their home town of LaBelle, Fla., was under water for seven weeks to a depth of from 15 inches to 4 feet on its main street. Quite a considerable crop of fall honey was also lost.

Apis Club of Egypt

A copy of the Egyptian Mail, published at Cairo, conveys the information that a branch of the Apis Club has recently been formed in that city. Dr. Abushady, editor of the Bee World is now in Egypt and it is through his influence that this branch of the organization has been formed. With several branches already formed in America, the Apis Club movement bids fair to furnish an international organization of world-wide scope.

Stings

The Germans have sent a large consignment of bees to France as payment in kind. It is safe to bet their stings were not extracted.—(Greenville, South Carolina, Piedmont).

Vocational Students Entering Bee-keeping

The vocational schools for veterans have now been established long enough so that graduates are seeking practical employment.

A recent letter from Mr. H. L. Cress, Jr., Instructor in Apiculture of the Vocational School at Chillicothe, Ohio, gives the following information in which some of our subscribers may be especially interested. If so, they should apply directly to Mr. H. L. Cress, Jr.

"Trainees at the Vocational School No. 1 are completing at various seasons of the year their institutional training in apiculture, depending upon the date of their induction into training. The equipment we have here provides excellent theoretical and practical training, thereby making these men capable apiarists.

"On completion of their institutional training, the trainees will be put out on project or placement training, and it is the desire of this office to place the latter type with a responsible commercial honey producer or queen breeder.

"We would be very glad to receive inquiries from those who might be interested in obtaining one or more of these men to work for them in their apiaries."

Peddling Honey

I wish to make a little suggestion regarding the sale of honey.

I believe if beekeepers would peddle honey among the farmers in the winter when there was time to spare, that they could increase the consumption of honey a great deal, as farmers are the best honey customers that can be found.

I have been doing that and have had great success; they usually buy one or two 10-pound pails at a time, and are willing to pay a pretty good price. Have been selling mine at 20c per pound.

Many of the farmers would buy honey if it were brought to them; but being busy, they neglect getting it, even when it is advertised in the papers.

C. W. Fitzsimons.

Iowa.

Queen Breeders' Organization

The American Honey Producers' League is sending out a circular to the principal bee breeders of the United States to get an opinion from them concerning the desirability of organizing a queen breeders' section of the American Honey Producers' League. There ought to be a number of ways in which such an organization could be of great benefit both to the queen breeders and the beekeepers.

It is suggested that such an organization could help the breeders in developing their business and also help in protecting both the breeder and the beekeeper from dishonest deals. We would appreciate hearing from any breeder who is sufficiently interested to do so.

H. F. Wilson.

WE MANUFACTURE

BEE SUPPLIES

THAT ARE MADE TO SATISFY

Let us quote you prices before you place your order, and we will save you money.

Write for our special prices on honey containers. We have a complete stock of glass and tin containers at prices that are right. Orders shipped the same day they are received.

SPECIAL PRICES TO BEEKEEPERS' ASSOCIATIONS.

Write for our new 1923 catalog showing full line of bee supplies.

A. H. Rusch & Son Co., Reedsville, Wis.

Nuclei Our Specialty—Package Bees

Three-banded Italian Queens

Our BEES and our EXPERIENCE will give you prompt and satisfactory service.

One 2-frame nuclei, no queen, \$3.75; 25 or more, \$3.50; 50 or more, \$3.25; 100 or more, \$3.00.

One 3-frame nuclei, no queen, \$5.00; 25 or more, \$4.75; 50 or more, \$4.50; 100 or more, \$4.25.

QUEENS: One untested queen, \$1.50; 12, \$15; 50, \$60; 100, \$100.

Two and three-pound packages of bees at the same price of two- and three-frame nuclei, respectively. Our early order discounts from above prices will interest you. Write and get them before placing your order.

Cotton Belt Apiaries, Roxton, Texas

BEEKEEPERS WE MANUFACTURE DOVETAILED HIVES, HOFFMAN FRAMES, SECTIONS AND SHIPPING CASES

Our hives are made of best grade White Pine, cut accurate and smooth to standard measure. Sections are made of Basswood polished on both sides. There are no better made.

We carry a complete line of everything used in the apiary. Our shipping facilities are as good as can be found anywhere. We want your business. We guarantee prompt and satisfactory service. Price list free.

MARSHFIELD MANUFACTURING COMPANY, Marshfield, Wis.

PACKAGE BEES FOR 1923

Three-band Italians only bred for business. A 2-pound package of the MOSES hustlers with a select untested Queen, \$3.75, 25 to 100 packages \$3.50; 10 per cent books your order. Safe arrival and satisfaction GUARANTEED ON EVERY PACKAGE AND QUEEN SHIPPED.

Order now for spring delivery, and make sure of shipping date. I do not accept more orders than I can fill promptly.

W. H. MOSES, Lane City, Texas, U. S. A.



OUR JOB!



TO SHIP PROMPTLY THE ROOT GOODS YOU WILL USE THIS SEASON

For Dependable Root Supplies and Airco Foundation are carried in stock at these points, ready for your need

A dependable dealer is ready to serve you, saving you time and freight charges

South Dakota

P. J. Pooley, Mitchell.
O. G. Borton, Scotland.
Rapid City Implement Co.,
Rapid City.

Nebraska

Carhart Lumber Co., Wayne.
Griswold Seed Co., Lincoln.

Colorado

Foster Honey & Merc. Co.,
Boulder.

Iowa

A. I. Root Co., Council
Bluffs.
Wertz Seed Co., Sioux City.
A. D. Burhans & Son, Wa-
terloo.

Montana

Lodge Grass Apiaries, Lodge
Grass.

Kansas

A. V. Small, Augusta.
J. Underwood & Sons, Law-
rence.
Price Bondurant, Great
Bend.
Herschel Short, Guilford.

Oklahoma

Stiles Bee Supply Co., Still-
water.

A. I. ROOT CO., Council Bluffs, Iowa

Crop and Market Report

Compiled by M. G. Dadant

For our April report we asked our correspondents to answer the following questions: 1. How much honey is there left on hand in your section? 2. What is the demand? 3. In what condition are bees coming out of winter quarters? 4. How are honey plant conditions? What are the prospects?

HONEY LEFT ON HAND

Reports from practically the entire southeast of the United States would indicate that nearly all stocks of honey have left the hands of producers. In fact it should all be cleaned up before the new crop comes on. The largest amount reported on hand was 20 per cent by one reporter in Connecticut and from 5 to 12 per cent by several in New York.

The entire southeast is in an especially good shape, having cleaned up practically all of their stocks and report the demand brisk.

This is true of the stocks in Texas, which are exhausted, although there is very little demand now. In the Central States reports would indicate that there is from 10 to 20 per cent of the honey left in the hands of producers. The bulk of this is in the hands of a few large producers, who have not been able to dispose of their crops at satisfactory figures. In many instances the local demand has been very light and these producers have not been able to place their honey in outside markets as they would desire.

Arizona reports practically all honey out of the hands of producers, as does New Mexico. In Colorado the northern half of the state and most of the eastern part have disposed of their crop. The western slope, however, has quite a large quantity of extracted honey on hand, as does Montana. Wyoming, Utah and Nevada seem to have disposed of the large bulk of the crop, although there are still a few cars left on hand. The same is true of Idaho, Washington and Oregon.

California seems to have sold early and the stocks on hand would not indicate that there will be a very large carry-over into the new year.

HONEY DEMAND

Throughout practically the entire United States there is an apathy in the demand for honey. In fact 90 per cent of the reports would indicate that the demand is from slow to fair, with a very few reporters claiming a good demand. The eastern and southeastern sections seem to be having better demand than does the Central West or the Inter-mountain territory.

CONDITION OF BEES

Throughout the north half of the country, as well as in the northeast, there has been a blanket of snow ever since late December, and bees have had very few flights. The bees have been going through in poor condition, but it is a question as to just how long the confinement of bees will continue and just what the losses will be from dysentery and other causes. Reports would indicate that well protected bees will come through in good shape, but

that those in the hands of smaller beekeepers, who did not give sufficient protection, will show a very heavy loss.

Throughout the Central section, comprising the states of Kansas, Missouri, Iowa, Indiana, etc., as well as farther south, the weather has been sufficiently moderate so that the bees have had a number of good cleansing flights and should be coming out in good shape where well protected and sufficient stores were given. The warm winter, however, gives cause for considerable anxiety, and beekeepers are waiting every opportunity to get to their bees when the roads are passable.

The Inter-mountain territory and farther north have also had heavy snows and continued cold weather, which would indicate that the losses will be heavy with unprotected bees.

In Texas the warm winter has caused the bees to consume large quantities of honey and many are running short where not carefully provided for by the beekeeper. This is partly true in the southeast.

In California bees are coming through in excellent shape.

HONEY PLANT PROSPECTS

As indicated above, the entire half of the United States has been covered by a blanket of snow for most of the winter which would indicate that the clovers should come through in good shape, especially inasmuch as there was not a large amount of frost in the ground.

Farther south the opposite has been true. There has been a deficiency of moisture which has caused the clovers to dry out considerably, and there is question as to whether or not there will be a sufficient stand to make a crop the coming year. This is especially true in case of Illinois and neighboring states.

However, recent snows and rains have given considerable moisture and it is hoped that this will alleviate conditions.

SUMMARY

All in all, it looks as if there might be a little more honey carried over into the new year than a year ago. However, the recent advances in the price of sugar and consequent demand on the part of bakers and other manufacturers for a substitute sweet are calling for a little larger demand for honey.

In fact, recent market reports and quotations from California would indicate that the honey prices have stiffened considerably and it is hoped that there will be a further stiffening within the next month or two, as the first orange honey does not become available until almost June.

A noteworthy news note is that Cuban honey is selling F. O. B. shipping point in Cuba at 5c per pound. This should have a tendency to push up the price of amber honeys in this country and, of course, this partly is responsible for the quick cleaning up of stocks in the southeast. All in all, conditions do not seem to be abnormal in view of the fact that the large buyers of honey are still apathetic in their buying and are not putting in large stocks ahead.

Bear's Wonderful Mountain Bred Italian Bees

Will give you a return on the money that you invest that can be excelled by no others. I send you one Hoffman frame, with honey and emerging brood, one pound of bees, one splendid young golden or three-band or leather-colored queen, mated and laying en route to you, and one pound of bees, for five dollars, or two frames of brood and the above for six dollars. These bees are raised high up in the Allegheny Mountains, where conditions make for long-range honey gathering. No man in the United States can ship better bees than these are. Send me a trial order; place your order now for May delivery; 10 to 20 per cent books your order. Canadians, I can save many of you one to two thousand miles of the long haul over orders from the south and west. Safe delivery guaranteed. (These three words mean what they express). Health certificate. Send the order now.

HIRAM H. BEAR, Hinton, West Virginia

ITALIAN BEES AND QUEENS

FOUR, TWENTY-COMB QUEENS

In April, 1921, one queen daughter of St. Romain's Honey Girl developed to occupy twenty combs in Hoffman frames for brood. Since that time I have produced one other daughter and two granddaughters that developed to same capacity.

Chaffee-Crites Bee Farms, Amenia, N. D., have leased St. Romain's Honey Girl for the season.

Packages and Nuclei, with Untested Queens:

2-lb. package, or 2-fr. nucleus, \$4.75; 25 or more, \$4.50 each. 3-lb. package, or 3-fr. nucleus, \$6.25; 25 or more, \$6.00 each.
4-lb. package, or 4-fr. nucleus, \$7.25; 25 or more, \$7.00 each. Pound packages shipped on comb with stores for travel.

Guarantee: To replace mismated queens; to deliver safely to your Express Station; to give the satisfaction you have a right to expect; to furnish certificate of inspection.

Apply for prices on queens for summer and fall deliveries.

J. L. ST. ROMAIN, APIARIST, HAMBURG, LOUISIANA

ITALIAN BEES — NUCLEI

Our nuclei are pure Italian stock made up with an ample supply of bees and good combs of sealed brood, supplied with a young laying queen. Delivery begins April 15.

NUCLEI

One-frame nucleus Italian bees, with untested queen	\$3.50	In lots of 25 or more, each	\$4.00
In lots of 25 or more, each	3.00	Three-frame nucleus Italian bees, with untested queen	5.50
Two-frame nucleus Italian bees, with untested queen	4.50	In lots of 25 or more, each	5.00

PACKAGES

We also offer you the same stock of bees in young packages, giving you good young bees, and full weight. Delivery begins May 1.

One-pound package Italian bees, with untested queen	\$3.25	In lots of 25 or more, each	4.00
In lots of 25 or more, each	3.00	Three-pound package Italian bees, with untested queen	5.50
Two-pound package Italian bees, with untested queen	4.50	In lots of 25 or more, each	5.00

QUEENS

Tested and untested queens that are proving their superiority to beekeepers over the entire United States and Canada.

	To June 15.	After June 15.		To June 15.	After June 15.
One untested Italian queen	\$1.25	\$1.00	One tested Italian queen	\$2.00	\$1.25
Ten or more	1.00	.75	Ten or more	1.50	1.00

Freedom from disease, safe arrival and satisfaction guaranteed.

CYPRESS SUPPLIES

Standard dimensions, accurately made and are of the most durable woods known. Many are pleased with the excellent quality and low price of these goods.

100 Hoffman brood frames	\$4.90	5 10-frame comb-honey supers	4.00
5 10-frame one-story metal cover hives	15.75	5 10-frame shallow extracting supers	4.25
5 10-frame bodies with frames	6.80		

Send for catalog of complete line.

The STOVER APIARIES, Mayhew, Miss.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue: If intended for classified department it should be so stated when advertisement is sent.

BEES AND QUEENS

BEAR'S MOUNTAIN BRED BEES. Page 200.
HONEY & PACKAGE BEES—Atwater.

ELIGIBLE QUEENS—Special sale of a limited number of my select tested queens eligible for breeding. Bright 3-banded Italians, 3-frame nuclei with tested queen, \$10, on Hoffman wired frames. The cream of my yard, and are something worth while. I have never had any bee disease in my yard. A queen breeder for 46 years. Safe arrival guaranteed. Terms 10 per cent to book order, or 6 per cent discount cash with order. Can deliver these nuclei in May.

J. W. Bittenbender, Knoxville, Iowa.

OUR CLOVERS, as well as our bees, are wonderful honey producers. Hulled scarified seed guaranteed to be 50 per cent pure annual and the balance pure biennial, at the following low prices, express or postage prepaid: 100 pounds and up, 15¢ a pound; 50 pounds up to 100 pounds, 17½¢ a pound; 25 pounds up to 50 pounds, 20¢ a pound, and in 5 and 10 pound lots, 25¢ a pound. Germination guaranteed to please.

M. C. Berry & Co., Montgomery, Ala.

CONNECTICUT QUEENS—Highest grade 3-banded Italians. Ready June 1st. Untested, 1, \$1.15; 12, \$12; 50, \$47.50; 100, \$90. Two-pounds bees with queen, \$4.50; 3 pounds with queen, \$6.50; two-frame nuclei with queen, \$5; 3 frames with queen, \$6. No disease. Safe arrival and satisfaction guaranteed. Conn. Valley Apiaries.

A. E. Crandall, Berlin, Conn.

TRY THE ACHORD STRAIN OR ITALIANS—They have helped produce wonderful honey crops in many states. Good-natured, nicely marked, vigorous three-banded Italians. Bred in two of the largest, best equipped queen-rearing apiaries in the South, and shipped to you in clean, convenient, up-to-date packages, with full instructions for hiving. Delivery April 15th and later. Express or mail shipment. By express, 1 lb. bees, \$2.25 each; 25 or more, \$2.15 each; 2 lbs. bees, \$3.75 each; 25 or more, \$3.50 each; 3 lbs. bees, \$5.25 each; 25 or more, \$5 each. If wanted by parcel post add 15¢ each to the price of the 1-lb. size and 25¢ each to 2 and 3-lb. sizes. Also add postage. Mailing weight of the 1, 2 and 3-lb. packages is 4, 6 and 8 pounds each, respectively. Select untested queens for the above packages, or for mailing, \$1.25 each; 10, \$11.50; 25, \$25. Young tested queens, \$1.75 each. Order early and state date you wish shipment. You will not be disappointed in the stock and service we give you. For a more complete, descriptive price list, send a postal with your address.

W. D. Achord, Fitzpatrick, Ala.

PINARD'S quality of Italian queens and package bees. Laying, untested queens, \$1 each. Write for prices on large lots. Circular free.

A. J. Pinard, Morgan Hill, Calif.

27 YEARS of select breeding gives us bees of wonderful qualities. None better and few as good.

M. C. Berry & Co., Montgomery, Ala.

PACKAGE BEES for Idaho, Oregon, Washington, Montana, and British Columbia. Buy near home and get bees full of vigor and vitality; 1,200 colonies to draw from. Write for prices, naming desired date of shipment. E. F. Atwater, Meridian, Ida.

Established here in 1901. Former Field Agent in Beekeeping, U. S. Dept. of Agr.

DELIVERED—Pure Italian bees and queens. Two-pound packages with selected queen, 1-10, \$4.75; 12-24, \$4.60; 25-50, \$4.50; 50 or more, \$4.40. Not delivered, at 50 cents per package less; 25 per cent cash books order. Queens, \$1, or \$10 per dozen. We ship on date specified; begin shipping April 15; safe arrival and satisfaction guaranteed. We ship only the best.

W. C. Smith & Co., Calhoun, Ala.

QUEENS—\$1.00 each. Package bees on 1 brood frame. "That bees will build to bottom bar," free with each queen or package bees.

F. M. Russell, Roxbury, Ohio.

TWO-POUND PKGS. Italian bees with unt. queens, \$4.50 each, 15 or more \$4 each. Complete satisfaction guaranteed.

J. J. Scott, Crowville, La.

MOTT'S Northern bred Italian queens. Sel. untested, \$1; Sel. guaranteed pure mated, \$1.25; Sel. tested, \$2.50. Pound packages in June. Plans "How to Introduce Queens" 25c.

E. E. Mott, Glenwood, Mich.

FOR SALE—Three-frame nuclei hybrid bees with guaranteed pure untested Italian queen, \$5 each. Safe arrival guaranteed.

Carl L. Wilson Apiaries, Mt. Vernon, Ga.

WE ARE BOOKING orders now for spring deliveries. Bright Italian queens, untested \$1.00; six, \$5.00; 100, \$75. Virgins 50¢ each, 100, \$40.

P. B. Skinner, Greenville, Ala.

FOR SALE—160 colonies of bees in good condition. All in 8-frame Heddon hives; also a large supply of comb and extracting supers and 60-lb cans in double cases. For particulars write.

Mrs. J. C. Wheeler, 622 S. Austin Boulevard, Oak Park, Ill.

NUCLEI and package bees. Foulbrood unknown in this district. Send for prices, giving amount desired.

P. H. Benson, Palo Verde, Ariz.

PURE BRED CARNIOLAN QUEENS—Pure Carniolans are gentler, more vigorous, much more prolific and better honey gatherers than any Italians. Hardy, disease-resisting, longer-tongued, better winterers—they have no superiors. We are breeding from stock we imported direct from Carniola. Write for circular.

W. A. Holmberg, Denair, Calif.

NUCLEI and package bees; send for circular. Allen Latham, Norwichtown, Conn.

GOLDEN ITALIAN QUEENS—None better. One, \$1.00; six, \$5.00; twelve, \$10. Select, one, \$1.25; six, \$7.00; twelve, \$13. Virgins, one, 60¢; 12, \$5.00. Clipped when requested; ready April 15. Money back if not satisfied.

Crenshaw County Apiary, Rutledge, Ala.

FOR SALE—3-banded Italian bees on wired Hoffman frames for June delivering; 2-frame nuclei with tested queen, \$6.50; 2-frame nuclei with untested queen, \$5.50; 3-frame nuclei with tested queen, \$7.50; 3-frame nuclei with untested queen, \$6.50; 2-lb. package with tested queen, \$6.50; 2-lb. package with untested queen, \$5.50; 3-lb. package with tested queen, \$7.50; 3-lb. package with untested queen, \$6.50. Tested queens, \$2 each; untested queens, \$1.25; 3 or more 10 per cent less. Safe arrival guaranteed; no disease. Terms, 10 per cent to book order, or 6 per cent discount cash with order.

J. W. Bittenbender, Knoxville, Iowa.

POUND PACKAGES nuclei and queens—One frame of brood and bees, one extra pound of bees and one young Italian queen, \$3.00. Read my large ad in this issue before placing your order.

Brazos Valley Apiaries, Gause, Texas.

H. E. Graham, Prop.

SHE-SUITS-ME QUEENS—1923, after June 1, \$1.50 each. One dollar per queen when ordered four weeks or more in advance.

Allen Latham, Norwichtown, Conn.

BIG bright Golden Italian queens, the kind that are bred for beauty and also honey gathering qualities. We guarantee to please you. Price, untested, \$1.25 each, 6 for \$6.00, 12 for \$11.00; \$85 per 100. Tested, \$2.00.

Honorville Bee Co., Honorville, Ala.

FOR SALE—Missouri bred Italian queens, \$1 each; 6 for \$5.

L. E. Alwein, 1206 N. 13th St. St. Joseph, Mo.

IF YOU are in the market for bees and queens for April, May and June (1923) delivery place your order now. Two-frame nuclei with select untested queens, \$4 each; 2-frame nuclei with select untested queens, \$5 each; three-banded Italian queens, select untested \$1.95 each; select tested \$2.50 each; select tested breeding queens, \$6 each. For carload lots write for special prices. Fifteen per cent deposit to book order, balance payable just prior to shipment. Safe arrival and satisfaction guaranteed.

J. P. Anthony, Apalachicola, Fla.

QUEENS—High grade Italian queens, three-banded; also goldens. Untested, one, \$1.25; 6, \$6.50; twelve, \$12. Tested, one, \$2.00; six, \$11.50; twelve, \$22.00. Package bees—Strain of bees, St. Romain Honey Girl and Davis. Safe arrival and satisfaction guaranteed.

P. O. Watkins, Cullasaja, N. C.

IF YOU WANT good, bright Italian queens by return mail, send your orders for queens to us; \$1 each; \$11 per dozen, \$80 per hundred. Safe arrival, pure mating and reasonable satisfaction guaranteed in U. S. and Canada. One pound bees with queen, \$3; 2-lb. bees with queen, \$5. We pay delivery charges up to 1,000 miles and guarantee safe arrival in U. S. and Canada. No disease in our apiaries.

Graydon Bros., Rt. 4, Greenville, Ala.

IMPORTED QUEENS are a thing of the past for a while, at best, but my breeders from the last queen from Italy are producing excellent results. Price, 1, \$1.25; 6, \$7; 12, \$13; 25 or more, \$1.00 each.

M. G. Ward, Lathrop, Calif.

FOR SALE—Golden queens of 15 years' careful breeding; untested, \$1.95 each, or 6 for \$7.00; 12 or more, \$1.00 each. Tested, \$2.00 each. One-lb. package with untested queen, delivered, \$3.25; 2-lb. package with untested queen, delivered, \$5.00. Promptness and satisfaction my motto. Shipments beginning about April 15.

R. O. Cox, Box 25, Rutledge, Ala.

PETERMAN'S QUEENS have the name and reputation of being leaders in quality, size and color. I sort out and ship only a large select, thrifty laying queen, killing all that do not come up to this standard. The past season proved to me this pays big for repeat orders. Prices: 1, \$1.25; 6, \$7.00; 25 at \$1.00 each. Circular free.

H. Peterman, R. F. D., Lathrop, Calif.

GOLDENS, Italian queens for 1923. The big, bright, hustling kind. Satisfaction guaranteed. Price, \$1 each, six for \$5, twelve for \$10, one hundred for \$75. Tested, \$1.75 each. Also a few two-frame nuclei, with queen, for \$4.75.

E. F. Day, Honorville, Ala.

SELECT ITALIAN QUEENS—Not the cut-price kind. Tested, \$2.50; untested, \$1.25 each, and worth more. Circular free.

Geo. W. Coltrin & Son, Mathis, Tex.

UNSURPASSED ITALIAN QUEENS—Ready June 1. Untested, 1, \$1.25; 6, \$7; 12, \$12.50; 50, \$50; 100, \$95. Tested, 1, \$2; 6, \$11. Every queen is mated and laying before she is mailed.

J. D. Harrah, Freewater, Ore.

BEES—100 colonies, mostly Italians, with comb and extracting outfit.

B. H. Tripp, Brooklyn, Iowa.

WARRANTED, QUEENS—There are no black or hybrid bees around here, so my queens will be mated pure Italian. My breeders are the best out of 600 colonies. I mail them in my special sure-introducing cages at \$1.25 each; no honey used in candy. Send me your order now, pay when you want them. Expect to start sending them by the first of June.

Daniel Danielsen, Brush, Colo.

THE VERY BEST BUY in package bees for May delivery. Card brings circular and prices.

The Scott Apiaries, LaGrange, Ind.

FOR SALE—Bright three-banded Italian queens, 1 to 12, \$1.25 each; 13 to 25, \$1.15 each; 10 per cent discount when ordered 4 weeks or more in advance. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10.

R. E. Grout, Jamaica, Vt.

FOR SALE—2-frame nuclei, \$2.25; 3-frame nuclei, \$3.25. No queens.

James Johnson, Pocahontas, Ark.

I AM BOOKING ORDERS for last part of this month and May delivery, 3-frame nuclei and queens at reduced price. Caucasian or Italian race.

Peter Schaffhauser, Havelock, N. Car.

FOR SALE—Golden Italian queens, untested, \$1.15; 6 for \$6.50; 12 or more, \$1.00 each. Tested, \$2.00. Select tested, \$3.00. No disease of any kind. Bees very gentle and good honey gatherers.

D. T. Gaster, Rt. 2, Randleman, N. C.

THREE-BANDED Italian queens, untested, \$1.25; per dozen \$12. Two-pound package bees, \$4.00; with queen, \$5.00. Satisfaction given.

J. Allen, Catherine, Ala.

PURE Italian bees and queens, as good as the best. Prices: Untested, \$1.00 each or \$10.00 per dozen. Package bees, 1-lb., with untested queen, \$2.50; 2-lb., with untested queen, \$3.50; no disease. Our bees are state inspected.

O. P. Hendrix & Son, West Point, Miss.

OLD, RELIABLE QUEEN-BREEDER—In bee work 22 years. Three-banded queens, 3-frame nuclei, packages and full colonies, any quantity. Ready after April 1.

Curd Walker, Scotts Station, Ala.

YES our clovers, as well as our bees are great honey producers. They do well together. Try some of both.

M. C. Berry & Co., Montgomery, Ala.

GOLDEN QUEENS, GOLDEN—Ready after April 1. Untested, 1, \$1.25; dozen, \$11; select untested, 1, \$1.50; dozen, \$13.50. Write for prices on nuclei and pound packages. Pure mating and safe arrival guaranteed in U. S. and Canada.

Tillery Bros., R. 5, Greenville, Ala.

PACKAGE BEES for 1923 delivery, Burleson's "Old Reliable," three-banded Italian bees and queens. None better; two (2) pound packages, \$4.25, and three (3) pound packages \$5.50 each. Select untested queen with each package. Ten per cent (10%) down with order, balance fifteen (15) days before bees are to be shipped. I use sugar syrup for feed in transit and guarantee no disease and safe arrival.

T. W. Burleson, Waxahachie, Texas.

NUCLEI—June and July delivery; large, strong 3-frame nuclei with queen, at \$4.75 each; lots of 10 at \$42.50.

The Foster Honey Company, Boulder, Colo.

GOLDEN ITALIAN QUEENS—Produce bees solid yellow to tip; disease resisting, prolific, gentle and good honey gatherers. Untested, \$1.25; select untested, \$1.50 each; tested, \$3.00. Dr. White Bee Company, Sandia, Texas.

"Florida First" Queens for April, May and June, \$1.50 each; 5 for \$7. Circular free.

R. C. Boswell, Manager,

Indian River Apiaries, Wilson, Fla.

DO YOU NEED QUEENS?—Try mine; you cannot beat the quality at any price. Am working for the name of being honest and reliable, selling the best queens. Let me show you. Circular with prices free.

H. Peterman, R. F. D., Lathrop, Calif.

THREE-BANDED ITALIAN QUEENS—Select untested, \$1 each; \$10 per dozen. Pound packages of bees; golden Italian queens at above prices; honey gatherers (no disease). Satisfaction guaranteed.

W. T. Perdue & Sons, Fort Deposit, Ala.

PACKAGE BEES for 1923—Now booking orders for Yancey Hustlers. See larger ad for prices.

Caney Valley Apiaries,

Bay City, Texas,

Yancey Bros., Owners.

FOR SALE—1923 golden Italian queens, \$1.25; dozen, \$12. Safe arrival and satisfaction guaranteed.

J. J. Sanford & Son, McKenzie, Ala.

FOR descriptive price list of Carniolan, Caucasian, Italian and Golden queens, write to Grant Anderson, Rt. 2, Waco, Texas.

BURLESON'S "Old Reliable Three-banded Italian Queens," guaranteed none better. Untested, \$1.25 each; \$12 per dozen. Select untested, \$1.50 each; \$15 per dozen. Queens ready to ship April 10th. Send all orders, with remittance, to my manager, J. W. Seay, Matthis, Texas.

T. W. Burleson, Waxahachie, Texas.

QUEENS, QUEENS—From my old leather-back Italian queen. She is the head of my apiaries. Ready to ship after April 15. Untested, \$1.25; 12, \$1 each. Select untested, \$1.50; 12, \$1.25 each. Tested, \$2.50; 12, \$2.25 each. Select tested, \$3.00 each. O. O. Wilder & Son, Rt. 2, Box 14, Corpus Christi, Texas.

CARNIOLANS—No better strain can be found in the United States than stock my Carniolan queen yard. Price, 1, \$1.25; 6, \$7; 12, \$13; 25 or more, \$1 each.

M. G. Ward, Lathrop, Calif.

3-BAND ITALIANS, developed from the best and most popular strains by continuous selection. When I can produce or discover better, they will be adopted. Queens, untested, after May 15, \$1.50 each, 6 for \$8. Tested, \$2.50 each. **CARNITALIANS**—Five miles from my Italian yard I raise Carnitalians, a cross derived from Jan Stigar Carniolan queens and Golden Italian drones. I calculate fifty years to get color marking fixed. Don't wait for that; the blend of blood and quality is there now. Tested queens, after June 1, \$2.50 each.

John Protheroe, Rustburg, Virginia.

PACKAGE BEES—2000 big, strong, healthy colonies; will be ready to supply package bees in the spring. Italian or Carniolan queens. Let me quote prices and book your order early. A small deposit reserves shipping date. Circular free.

J. E. Wing, 155 Schiele, Ave.,

San Jose, Calif.

HARDY ITALIAN QUEENS, \$1 each.

W. G. Lauver, Middletown, Pa.

BEES BY THE POUND, ALSO QUEENS—

Booking orders now. Free circular gives prices, etc. See larger ad. elsewhere.

Nueces County Apiaries, Calallen, Texas.

E. B. Ault, Prop.

OUR NEW BOOKLETS telling all about our bees and our clovers are now ready to mail. Let us mail you one.

M. C. Berry & Co., Montgomery, Ala.

SEE my display ad. in this number.

Jes Dalton, Bordelonville, La.

SEE MY DISPLAY ADV. for package bees, queens and nuclei.

W. H. Moses, Lane City, Texas.

BEES AND QUEENS at reduced prices. Cypress hives for sale. Write for terms.

Otto Diestel, Eliza, Ga.

MY BREEDING STOCK contains breeders from the last imported queen from Italy, and they are good queens.

M. G. Ward, Lathrop, Calif.

THE STAPLETON APIARIES are located in south Georgia, near the Florida line, and we are in position to make early shipments of both bees and queens. Queen rearing yard is in charge of Mr. A. S. Blanks, who has had eight years experience. See display advertisement in this issue for prices.

N. L. Stapleton, Colquitt, Ga.

PACKAGE BEES, nuclei and queens, April and May delivery. Special, 2 lbs. bees on frame emerging brood with queen introduced and laying en route, \$4.75; 1 lb. of bees with queen, \$3.90; 2-lb. package, \$4.; 3-lb. package, \$5. Nuclei same price. All the above bees bright three-band Italian and include pure Italian select untested queen. Queens, select untested, \$1.25; 6, \$7; 12 or more, \$1 each. Strong nuclei, full weight packages; certificate with each shipment. Satisfaction and safe arrival guaranteed.

J. L. Morgan, Apalachicola, Fla.

Formerly Tupelo Honey Co.

QUEENS reared during May and June are the finest of the season. Our great honey-gathering and disease-resisting strains of the 3-banded and golden Italians are as fine as can be had. Untested, \$1; select untested, \$1.25. Virgins, 50c each. Satisfaction guaranteed.

Ohio Valley Bee Co., Catlettsburg, Ky.

I AM BOOKING ORDERS for 3-banded Italian queens for May 30 and after. My strain of bees hold the Indiana record for comb honey per colony in a run of 10 years. Send for booklet and prices.

Charles Kennard, Knightstown, Ind.

100 2-LB. PACKAGES Italian bees and queens, May and June delivery. Shipped on frame of wired foundation. Untested, \$6.00; tested, \$7.00; tested queen only, \$2.50. For June, will supply queens bred from a daughter of Cutts Famous 577-pound honey queen, that has made extra good in our yard. Orders must be booked ahead. Send for our circular.

E. F. Quigley & Son, Unionville, Mo.

WE think our 1923 prices on package bees, nuclei and queens reasonable. We quote a 2-lb. package with select untested Italian queen in lots of 25 or more at \$4.00. Other sizes in proportion and with a quantity discount to apply. We also want to quote you on your queen requirements. Write for circular and prices. We want to tell you about our bees.

R. V. Stearns, Brady, Tex.

PURE ITALIAN QUEENS—Untested, \$1.00; tested, \$1.25; 2-lb. package, \$2.75. Add price of queen wanted. Safe arrival guaranteed after May 10. Write for prices on colonies and other specials.

Birdie M. Hartle,

924 Pleasant St., Reynoldsville, Pa.

HAVE YOU written for our circular on pure Carniolan queens? It tells you a lot about bees you have never heard of before. A postal will bring it.

W. A. Holmberg, Denair, Calif.

THAGARD'S ITALIAN QUEENS—Three-bands and goldens that have stood the test; 1 to 4, \$1.00; 5 to 11, 95c; 12 to 24, 90c each. See our March advertisement for prices on our imported three-bands from Italy. Get our prices on package bees.

The V. R. Thagard Co., Greenville, Ala.

MERRILL'S three-banded Italian queens are guaranteed to arrive safely and give satisfaction. Queens will be ready for shipment June 1, 1.00 each. Try them.

R. E. Merrill, 125 Mechanic St., Muncy, Pa.

PACKAGES—2 lbs. with queen, \$4 in lots of 10; lots of 6 \$4.25; single, \$4.50. Shipped on Hoffman frame, April 15 to June 1st; choice healthy Italians, everything guaranteed. Order now with remittance.

R. S. Knight, Route 2, New Orleans, La.

FOR SALE—10 hives of good, nice, bright color bees, in 10-frame hives, with 8-frame supers and frame for shallow extract honey. Bees, hives and supers in good condition, \$4.50 each.

J. T. Collins, Ludowici, Ga.

QUEENS and Package Bees, the producing kind. Prompt shipment after April 15. Satisfaction guaranteed. Circular free. Select Italian queens, \$1 each; \$10 dozen. Two-pound packages with queen, \$4.50.

P. M. Williams, Ft. Deposit, Ala.

HOLLOPETER'S Quality Queens plus Satisfactory Service, makes each season better. Select untested queens from finest three-banded stock, June, each \$1.50; 6, \$7.50; 5 per cent books order and insures timely delivery. Circular.

J. B. Holoopeter, Rockton, Pa.

WILLOW DELL three-banded Italian queens and nuclei, the kind that bring results. Best to winter; none better. A trial will prove it. May delivery with queens; 2-frame nuclei, \$4.00; 3-frame, \$5.25; Jumbo frames, \$4.50 and \$5.75; queens, \$1.25 each.

H. S. Ostrander, Mellenville, N. Y.

THREE-BAND bright Italian queens for 1923. Guaranteed purely mated. Good hustlers and gentle. One, \$1.00; 6, \$5.00; 12, \$9.00. Write for folder or the principle of introducing. Orders booked as received.

J. Frank Diemer, Liberty, Mo.

HONEY AND BEESWAX

BEAR'S MOUNTAIN BRED BEES. Page 200.

HONEY & PACKAGE BEES—Atwater.

WANTED—1 or 2 cars of white extracted honey (in new 60-lb. cans), or similar amount in 1 to 5-ton lots. If satisfactory I will call on those mailing sample and quoting lowest spot cash price. A. W. Smith, Birmingham, Mich.

FOR SALE—Two-tons white comb honey at reduced prices; also dark extracted; state your wants. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Fancy white clover comb honey in 4½x5 sections; 24 section cases, 6 or 9 cases to the carrier. Write for prices. Our honey won first premium at Illinois State Fair and also at Council Bluffs, Iowa.

Aaron Coplin, Wenona, Ill.

FOR SALE—White and amber extracted honey. Write for prices. State quantity wanted. Dadant & Sons, Hamilton, Illinois.

HONEY FOR SALE—In 60-lb tins; water white orange, 14c; white sage, 12c; extra light amber sage, 10½c New York State buckwheat, 10c, for immediate shipment from New York.

Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Comb and extracted honey.

W. C. Moon, Henry, Ill.

FOR SALE—Michigan milkweed-raspberry white honey, mild and deliciously pleasing. In 60-pound cans, at 12½c per pound.

A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request.

Dadant & Sons, Hamilton, Ill.

CHOICE white clover extracted honey at \$13.00 per case, 120 lbs. net. Only a few left.

Edward A. Winkler, Rt. No. 1, Joliet, Ill.

YOUR HONEY—A No. 1 comb, \$4.00 per crate. C. H. Phillips, Le Claire, Iowa.

ATWATER HONEY—Carlot, 8c; small lots 8½c; pails all sold.

E. F. Atwater, Meridian, Idaho.

FOR SALE—Choice clover honey in 60-lb. cans. Write for prices, stating quantity wanted.

Lewis Klaty, Carsonville, Mich.

FOR SALE—Choice clover extracted honey in new cans and cases, in carload lots or case lots. Quality unexcelled. Write for prices stating quantity desired.

J. D. Beals, Oto, Iowa.

FOR SALE—White honey in 60-lb. cans; also West Indian in 50-gal. barrels. Samples and prices on request. A. I. Root Co., 23 Leonard St., New York City, N. Y.

BEEWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire. Dadant & Sons, Hamilton, Ill.

SUPPLIES

HONEY & PACKAGE BEES—Atwater.

BEAR'S MOUNTAIN BRED BEES. Page 200.

ADAPTABLE BEEHIVES are sound in principle and are practical. For free information address Geo. P. Wood, Peekskill, N. Y.

FOR SALE—Dadant's Light Brood Comb Foundation in 25 and 50 pound boxes at 60 cents per pound. Lake Region Honey Co., Birchwood, Wis.

SEE OUR LARGE AD. of bees elsewhere. Price of clover seed in classified elsewhere. Plant some for your bees.

M. C. Berry & Co., Montgomery, Ala.

FOR SALE—Regular Hoffman self-spacing frames, \$4.00 per hundred. Ideal self-spacing, \$3.00 per hundred. E. G. Lewis, Beeville, Texas.

ADD 5c a pound to price of seed when ordering for Canada. See prices elsewhere in classified.

M. C. Berry & Co., Montgomery, Ala.

BEE EQUIPMENT—For extracted or comb honey. Write for prices. The Foster Honey Company, Boulder, Colo.

CONNECTICUT and Rhode Island headquarters for Root's Beekeepers' supplies. A. W. Yates, 3 Chapman St., Hartford, Conn.

WESTERN BEEKEEPERS—We can demonstrate that you can save money on buying bee supplies of best quality. Write for our latest price list.

The Colorado Honey Producers' Association, Denver, Colo.

HAVE YOU any Bee Journals or bee books published previous to 1900 you wish to dispose of? If so send us a list.

American Bee Journal, Hamilton, Ill.

FOR SALE—We have a few crates of Lewis Beeware, slightly shopworn but of first grade (old width of 15 1/2 inches), which we are offering, while they last, at the following bargain prices: 1-story 10-frame dovetailed hives with Hoffman frames, per crate of five, \$11.52. No. 1 10-frame dovetailed supers, for comb honey, per crate of 1, 90c. Dadant & Sons, Hamilton, Ill.

FOR SALE—60-lb. cans, used once; washed outside; good cases, 50c per case of two, if taken before April 15th, f. o. b.

Bruner, the Beeman,

3836 No. Kostner Ave., Chicago, Ill.

PURE HUBAM sweet clover seed for sale. Write for prices. We test soil free. Edward A. Winkler, Rt. No. 1, Joliet, Ill.

GOOD USED HIVES, cheap. F. M. Cooper, Richview, Ill.

FOR SALE—Used scalloped section holders, 4 1/4 x 1 1/4 K. D., no nails, \$20 per thousand. Used sawed separators for above, \$5 per thousand; followers, 2c each; used springs, 40c per hundred, cash with order. First come first served.

B. F. Smith, Jr., Fromberg, Mont.

PUSH-IN COMB INTRODUCING CAGE, 35c; 3, \$1.00. Handy push-in comb queen cage, 10c. This introducing cage includes the principle of the Thompson introducing and mailing cage and will introduce queens safely. O. S. Rexford, Winsted, Conn.

FOR SALE OR TRADE—Duplex auto knitter (new) on a typewriter, saw table (Barnes preferred), or extractor. No junk wanted. Might buy outright, too, if a bargain. Enclose stamp if you expect a reply. Nic Klein, Hudson, Iowa.

FOR SALE

HONEY & PACKAGE BEES—Atwater.

BEAR'S MOUNTAIN BRED BEES. Page 200.

BEEES AND GOATS work well together. Pure blood registered Toggenburgs, bucks and does, for sale. Will crate and ship anywhere. Pedigrees sent on request. Jas. B. Prewitt, Elsinore, Calif., Box 5.

GLADIOLI BULBS, blooming size; mixed, \$2 per hundred. Choice varieties. Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Or will trade for Dadant uncapping can or honey tanks, inside fixtures for comb honey supers, all sizes and styles; bargains. Write for prices. Also some nice beeswax.

Edw. A. Winkler, Joliet, Ill., Rt. 1.

30 BU. CLEAN HUBAM SEED—\$10 per bushel for the lot, or \$11 in one bushel lots. Sacks included.

Curd Walker, Queen Breeder, Scotts Station, Ala.

FOR SALE—On account of low prices in honey, I am offering bees at pre-war prices. Package bees, 5 to 10 lbs., at \$1.10 per lb.; 10 to 25 lbs. at \$1.00 per lb.; 25 to 100 lbs. at 90c per lb.; over 100 lbs. at 85c per pound. Entire satisfaction guaranteed. Write for special low prices on queens, nuclei and full colonies of bees. Bank references furnished on request.

Winfield Gear Apiaries, Walnut Grove, Calif.

FOR SALE OR TRADE—Home portrait outfit, with 8x10 view camera, E. 8 anastigmatic lens; will trade for bees or supplies. Walter Orange, Ruthton, Minn.

FOR SALE—15 colonies bees. For further information, write.

Virgil Johnson, Melvin, Ill.

FOR SALE—In whole or in part. I'm sold down to about 200 colonies of bees; 800 10-frame supers (8 frames each), with drawn wired foundation combs, 8-frame (Root) power extractor, 2 1/2 H. P. engine, 3 Lobe rotary pumps, saw table, 150 new 10-frame hives in K. D. of Michigan white pine, and various other articles. The two yards can remain as located. Terms if desired, with acceptable backing. Reason for selling, old age and laziness.

A. W. Smith, Birmingham, Mich.

FOR SALE—30-acre ranch with 5-room house, garage, telephone, two-story beehouse, outbuildings, and priority ditch rights; 420 colonies bees, free from disease; complete equipment.

C. E. Lindsay, Colbran, Colo.

FOR SALE—Three colonies bees with all extras. Bargain. Stephen Huettner, 10219 Emerald Ave., Chicago.

FOR SALE—Used 8-frame hive bodies and supplies.

Thos. Atkinson,

Rt. No. 5, Box 200 D, Omaha, Neb.

FOR SALE—12x2x6 ft. galvanized steel uncapping tank with honey gate and 1/4-inch galvanized wire bottom. Frame on top ready for use, \$12.

Martin Carsmoe, Ruthven, Iowa.

FOR SALE—On tourist park and highway, about 5 acres in clover, on 1 1/2-mile-long Musky Lake—one mile from town. Good 2-story log house, new frame kitchen and screened porch. Excellent for bee and chicken farm. I cannot raise as much as I could sell to summer resort. Price \$1,250, \$650 cash needed; opportunity. More information, write Box 32, Mercer, Wis.

APIARY FOR SALE—Five well located apiaries equipped for extracted honey production for sale at exceptionally low prices. Foster Honey Company, Boulder, Colo.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. Superior Honey Co., Ogden, Utah.

FOR SALE—10-frame beehives, metal roofed. Price reasonable. Prompt service.

Thomas Cordner, Sparta, Wis.

CARNIOLANS and ITALIANS—I am doing my own work, and I am out to give the service you expect. Give me a trial and I will prove it. M. G. Ward, Lathrop, Calif.

FOR SALE—Good second-hand 60-lb cans, 2 cans to a case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., 2163 Central Ave., Cincinnati, Ohio.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans; also white alfalfa in cans. State quantity wanted and we will quote prices. Samples on request. Dadant & Sons, Hamilton, Ill.

BEEES FOR SALE—Nuclei or colonies. Write for special prices on large quantities. Box 437, Boulder, Colo.

MISCELLANEOUS

BEAR'S MOUNTAIN BRED BEES. Page 200.

HONEY & PACKAGE BEES—Atwater.

CASH for old bee books and journals. Write to me what you have. Francis Jager, University Farm, St. Paul, Minn.

THE BEE WORLD—The leading bee journal in Britain, and the only international bee review in existence. It is read, re-read and treasured. Will it not appeal to you? Specimen copy free from the publishers. The Apis Club, Benson, Oxon, England. Send us a postcard today. It is well worth your little trouble.

STRAWBERRY PLANTS—Senator-Dunlap exclusively, \$4.00 per 1,000; good stock, well grown.

S. D. Parks, Brownville, Neb.

HON-E-NUT CANDIES—Made from pure honey, nuts and chocolate. The most wholesome candy made. Try it and be convinced; \$1 per pound, postpaid.

Fairmount Apiaries, Schuylkill Haven, Pa.

WILL EXCHANGE bees or queens for a Barnes or similar bee saw outfit; also for typewriter.

J. L. Morgan, Apalachicola, Fla.

EARN \$20 weekly, spare time at home, addressing, mailing music circulars. Send 10c for music, information. American Music Co. 1658 Broadway, New York.

THE "Archiv fur Bienenkunde" is a valuable scientific publication. "It merits the appreciation of all beekeepers acquainted with the German language," says the Bee World (January, 1923). "The Archiv fur Bienenkunde, now in its fifth volume, is of as high grade as any bee journal which comes from abroad, dealing especially with the scientific aspects of beekeeping," says Gleanings in Bee Culture (February, 1923). Annual subscription, \$1. Specimen copy free. Publisher, Theodor Fisher, Freiburg im Breisgau, Kirchstrasse 31, Germany.

SITUATIONS

HONEY & PACKAGE BEES—Atwater.

BEAR'S MOUNTAIN BRED BEES. Page 200.

WANTED—Young man of energy and character who really wishes an opportunity to learn practical beekeeping where carloads of honey are produced. Every chance to learn and small wages given. Write, giving age, height, weight, habits, former employment, experience, photo, all in first letter, 1,200 colonies, 16 apiaries.

E. F. Atwater, Meridian, Idaho. (Former Special Field Agent in Beekeeping, U. S. Dept. Agr.)

WANTED—Man to work bees coming season. Give age, experience and wages wanted. Address, The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

WANTED—Experienced bee man to work several hundred colonies bees on shares. Must be a hustler. Please give references in first letter. Mathilde Candler, Cassville, Wis.

WANTED—Young man to help take care of about one thousand colonies; steady work the year round to the right party; state age, experience and wages expected.

Chas. Adams & Son, Greeley, Colo.

WANTED—Students to help in apiaries. Van's Honey Farms, Hebron, Ind.

WANTED—Single man for steady work with bees. Modern equipment, extracted honey. Give age, experience and wages expected in first letter.

B. F. Smith, Jr., Fromberg, Mont.

WANTED

HONEY & PACKAGE BEES—Atwater.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

BEEWAX WANTED—We need large quantities of beeswax and are paying good prices now. Ship to us at Hamilton, Ill., or Keokuk, Iowa, or drop us a card and we will quote f. o. b. here or your own station, as you may desire. Dadant & Sons, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

I WOULD LIKE to hear from party wishing to buy interest in a good bee and honey business. Chas. M. Boothby, Griggsville, Ill.

WANTED—From beehive and poultry appliance manufacturers, proposals for creation of a general agency in France. Roquette, Fons, Gard, France.

WANTED—Old postal stamps and envelopes.
R. LeMang,
25 Quincy St., Passaic, N. J.

WANTED—Several stands bees on shares.
Plenty sweet clover. Pound sections re-
tail at 25c. Write. Elmer Ridinger,
Frederick, S. D.

WANTED—Bees on shares.
Clarence A. Roberts, Rolfe, Iowa.

WANTED—Partner in the bee and honey
business. Must have some capital. Ex-
perience unnecessary. Best bee location in
the United States. Address,
"Beekeeper," Bee Journal, Hamilton, Ill.

WANTED—Catalogs of bee supplies.
Alton O. Carley, Munith, Mich.

WANTED—Foundation mill outfit.
H. Ginsback, Sioux Falls, S. Dak.

TO EXCHANGE—Improved, part irrigated,
Colorado western slope ranch, for bees and
equipment. Earl Bushey, Silt, Colo.

WANTED—A straw skep. Also good one-
story and half observation hive.
Thos. Atkinson,
Rt. No. 5, Box 200 D, Omaha, Neb.

WANTED—Uncapping cans and honey
tanks, also extractors.
Edward A. Winkler, Rt. No. 1, Joliet, Ill.

Disinfectants for Foulbrood

The January Beekeeper's Letter, sent out by Prof. Kelty, of Michigan, contains a suggestion which we think is worthy of being put before the general beekeeping public. Here it is:

Current issues of the bee journals carry articles on the treatment of foulbrood by means of disinfection. The propaganda spread by such articles will surely give bee inspectors throughout the country a lot of worry and trouble. It is perfectly normal for human beings to take the path of least resistance, avoiding extra labor and so-called "bother" whenever there is an opportunity presented. There are in Michigan hundreds of more or less indifferent beekeepers who are slow to discover disease when it invades their apiary, and who are still slower in their attempts to eradicate disease once it is discovered. To such beekeepers the loss of treating American foulbrood by the McEvoy or shaking treatment, together with the disposal of the combs and honey, seems like an unnecessary waste of equipment and labor. Such beekeepers will greet the treatment by disinfection with open arms and will argue with the bee inspector at great length against the use of the standard, successful, and only proved treatment whereby American foulbrood can be eradicated.

In the first place, if disinfection for American foulbrood is to be practiced, sufficient time must be given the colony to find out whether the disinfectant is going to work or not. This gives an added opportunity for disease to spread from colonies not treated. In many cases it will delay treatment until after the main honey flow, and the danger of robbing will be increased. It is felt that if progress is to be made in ridding Michigan of foulbrood by the area clean-up campaign now being carried on, present known methods must not give way to theory or unproved experience. It is possible that three or five years from now treatment by means of disinfection will be an established remedy. It is not at this time, and its use in connection with foulbrood is as dangerous as tinkering with T. N. T.

We Manufacture Foundation

and make a special¹ of working your beeswax into foundation for cash or wax in payment.

Ship your wax now for 1923 season. We furnish a full line of Supplies, Beehives, Sections, Frames, etc. The best made in Wisconsin. Write us for prices.

GUS DITTMER CO., Augusta, Wis.

Prices on Quality Queens

Order now. Requeen your apiary with tested queen, daughters from a line of record-breaking producers. Colonies, headed by mothers of queens we offer, last season made new nation-wide production records. Place your order now for future shipment. Send for our illustrated folder; it's free!

ABOUT MAY 12TH SHIPMENT

Untested queen daughter of St. Romain's Honey Girl, from our Southern yard, with 2-lb. nuclei and one frame stores for travel \$7.00

JUNE 1ST SHIPMENT

Honey Girl Queen in mailing cage \$2.00

Tested certified daughter of St. Romain's Honey Girl or Cutt's Hamilton Queen, with two-frame nuclei, her own bees \$8.00

Place your order now, as we will ship only a limited number at these prices. These are strictly quality queens which you can expect to make unusual production records.

Send for our complete list and the story of our new plan of queen breeding.

Chaffee-Crites Bee Farms

Amenia, North Dakota

COMB HONEY PRODUCERS MAKE MORE MONEY —

By using the best combined section press and foundation fastener to be had.



Price \$6.50 postpaid in the United States

H. D. RAUCHFUSS, Englewood, Colorado

This machine reduces to a minimum the loss by breakage and the waste of foundation. Is more rapid and accurate than any other. Will put up 4,000 complete sections in a day, and each will be exactly right. For this reason sections need not be put up till needed. The work is done in a sitting position and even a child can do satisfactory work with it. Is fully guaranteed for five years and if it does not give entire satisfaction your money will be returned to you. Is operated by treadle on floor, leaving both hands free for handling sections. Price, \$6.50 postpaid in United States.

Write for descriptive circular

Why the Difference?

Much is said about poor markets, low prices, unstable conditions and other depressing factors in honey production. It sometimes looks much as though the chief contributors to such conditions are the beekeepers, themselves. Here is a little evidence that way: In looking over the classified advertisements in a prominent farm paper, we find a section headed "Bees and Honey." Here are listed 15 ads for clover honey, at the following range of prices per pound: 10c, 12c, 12½c, 13c and 16c. What chance does the last fellow have?

Who is right and how shall we know until we all agree on how much it costs to produce and on a standard fair price? A few scattered cases of local underselling are common with most commodities, but in the case of honey the practice is emphatically universal, to the great discredit of the industry.

North Carolina Meeting

The seventh annual winter meeting of this Association, which was held in the room of the Charlotte Chamber of Commerce, Charlotte, N. C., was a very successful one. The interest that the beekeepers present took in the question of "What is the poison that is intended for the boll weevil going to do to the honeybee?" and in the cost of honey production, control of foulbrood disease, and many other topics of primary interest to

the beekeepers of North Carolina, made up for all that was lacking in numbers. The Chamber of Commerce did everything possible for those present and every beekeeper went away from the meeting feeling that Charlotte has a Chamber of Commerce that is second to none.

The following officers of the Association were elected for 1923:

President—D. W. Monroe, Chadbourne, N. C.

Vice-President—J. R. Pinkham, Washington, N. C.

Secretary-Treasurer—J. E. Eckert, State College, Raleigh, N. C.

Executive Committee—The above three and F. R. Jordan, Wilmington, N. C.; and O. C. Wall, Cooleemee, N. C.

Ontario Appropriation

It is reported that the Province of Ontario will have \$15,000 for bee disease eradication in 1923. R. F. Holtermann made a trip to Ottawa in the interest of Dominion aid and Hon. W. R. Motherwell, Dominion Minister of Agriculture, agreed to place \$5,000 in the estimate for this purpose. Hon. M. Doherty, Minister of Agriculture for Ontario, has promised \$10,000 for the Province.

Missouri Beekeepers' Association

With a better attendance right through the two days of meetings than any previous gathering at Columbia, with more big commercial

beekeepers present, and with a 500 per cent growth in members, the Missouri Apicultural Society has started out on a year of better accomplishments than ever. The new election resulted in re-electing most of the present staff:

President, A. W. Gale, of Chillicothe; Vice-President, A. T. Rodman, of Kansas City; Secretary, Miss Mina Scott, of Clinton, and Treasurer, Rev. M. B. Irvine, of Marshall, Mo. For Superintendent of Honey Exhibits at the State Fair at Sedalia, Mr. L. A. Schott, of Benton, was recommended, and the Society went on record suggesting that a class for exhibiting associations be made separate from prizes for exhibits by individuals, and to invite out-of-state exhibits.

Mr. A. F. Satterthwaite, of Webster Groves, was elected delegate to the annual meeting of the American Honey Producers' League.

With the better attendance went a more evident interest, a final banquet and unanimous election of officers in the evening, unlike other meetings, more harmony and a desire to get the best advice on the beekeepers' problems. For Official Advisor, the Society unanimously elected Hon. Jewell Mayes, Secretary of the State Board of Agriculture, and plan a year of official organization Bigger and better exhibits of the dealers in beeware were present, and a few speakers additional to the printed program were heard.

A. C. Burrill.

QUEENS

Three-band Italians

PACKAGE BEES

QUEENS

Silver Gray Carniolans

Western headquarters for PACKAGE BEES and RELIABLE QUEENS. Order now for spring delivery. Shipping season for PACKAGE BEES starts April 1, closes July 1; Queens April 1 to October 1. A small deposit reserves your shipping date.

Young bees, every one from a clean colony, with no honey used in shipping cages, also County Inspector's Certificate of bill of health with each shipment I guarantee. Write for circular and prices, stating quantity desired and date of delivery.

J. E. WING, SAN JOSE, CAL.

155 SCHIELE AVE.

Queens Package Bees for the Season of 1923

Mr. Beekeeper: If you want the best quality that is possible to produce, at the lowest price possible to produce, here is the place to buy your queens and bees. I positively guarantee that NO BETTER BEES CAN BE BOUGHT, NO MATTER WHERE YOU BUY THEM. When you order a tested queen or a selected untested queen from me I don't go out in the yard and cage the first thing I come to, like 50 per cent of the queen breeders do. I send out what I advertise; every queen or package must give satisfaction. Now is the time to place your order for spring delivery. Note my prices; if you can buy better bees for less money I would like to hear from you. One-fourth down with order, balance before shipping date.

PRICES—QUEENS

	1	6	12	100		1	6	12	100
Untested	\$.95	\$ 5.50	\$10.00	\$70.00	Select untested	1.10	6.50	12.00	80.00
					Tested	2.50	12.50	24.00	175.00

POUND PACKAGES WITH SELECTED UNTESTED QUEENS

1-pound packages, 1 to 12, \$3 each; 12 to 50, \$2.90 each
2-pound packages, 1 to 12, \$4.50 each; 12 to 50, \$4.40 each. 3-pound packages, 1 to 12, \$5.50 each; 12 to 50, \$5.40 each.

Shipment will be made on date specified. Prompt service and satisfied customers a specialty.

THE FARMER APIARIES, Ramer, Alabama



CLEANS COMBS INFECTED WITH American Foul Brood

PREVENTS LOSSES FROM European Foul Brood

Sterilizes infected honey so that it can be fed to bees without danger of spreading the disease

WHAT B-H IS

Be-Health is a clean non-poisonous liquid which kills the germs of both American and European foulbrood and, at the same time can in diluted solutions, be fed safely to bees. It cleans up extracting combs so that they are free of disease, and does away with the old, tedious process of scorching. The cost is very reasonable—about 10¢ per comb.

Fifteen cents worth of B-H will kill American

foulbrood infection in a gallon of mixed water and honey.

B-H has been developed in a skilled, scientific manner by the General Laboratories who have been engaged in practical farm disease preventive work for over ten years. We have made a study of foulbrood with successful beekeepers and well known entomologists. Our plan is the result of exhaustive field and laboratory work. It is safe, sure and inexpensive.

PREVENT LOSSES THIS YEAR

Send \$3 for a gallon of B-H today. Full directions and explanations with every package

General Laboratories, Madison, Wisconsin

THE VERY BEST SMOKER

IS NONE TOO GOOD

When you use a smoker you want it to smoke, and smoke right. Root smokers smoke right. We have an entire line to meet the requirements of any or all beekeepers.

Over Forty Years of Making Smokers

In 1877 Mr. A. I. Root built his first smoker, known at that time as the "Simplicity" smoker. The old "Simplicity" smoker was a good smoker in its day, 46 years ago. We have been solving the smoker problems since those pioneer days in beekeeping, and we are manufacturing a complete line today.

ROOT "Quality" Smokers are the very best because of their highest quality construction and best service. The bellows is made of an excellent grade of sheet skin, giving the smoker long life. The bellows is also bound by a projecting metal strip, which is found only on Root smokers. This strip enables the beekeeper to secure at once a firm grip without any trouble. No other make of smokers has this great advantage, and practical beekeepers tell us it is great.

THE ROOT "Quality" Smokers are the only smokers on the market with an anti-spark arrangement, preventing the possibility of sparks being forced out of the draft tube, and also prevents the smoke being sucked back into the bellows and destroying the life of the bellows leather. Anti-spark and smoke tube are just below the grate.

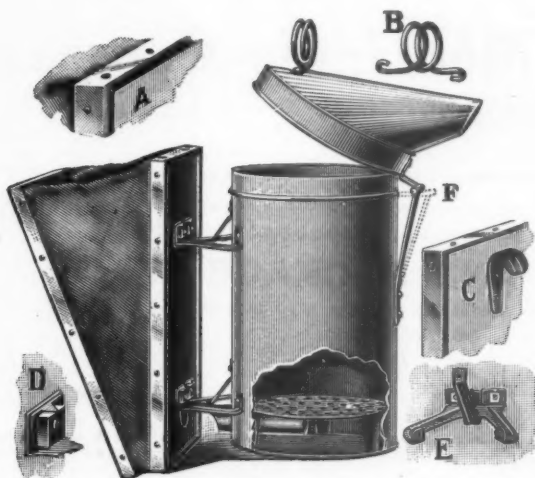


FIG. 1.—Details of the Root Smoker. A.—Metal projection to aid the fingers in holding the bellows. B.—Coiled wire handle that never gets hot. C.—Hook on back of the bellows. D.—Lock nuts that can never get loose. E.—Ribbed brace. F.—Flexible hinge that makes the cap nearly self-cleaning.

ROOT SMOKERS

Convenient size.

Anti-spark draft.

Smoke not sucked back into bellows.

Overlapping binding on bellows gives hand hold.

Lock nuts.

Flexible hinge.

Hook can be fastened on hinge or bellows.



Little Junior.



Standard.



Jumbo.



Big Jumbo, with shield.

The "Little Junior" is preferred by a large number of beginners and will meet the needs of the small beekeeper with only a few colonies. This is a new model, and is the best smoker made in the small-sized class.

The "Standard" is used by the largest percentage of beekeepers because of its lightness and its capacity to produce a good volume of smoke instantly. It is, probably, the best all-around smoker for the beekeeper having the average-sized apiary.

The "Jumbo" holds twice as much fuel as the "Standard" and therefore burns longer with each loading. It has all the quality of the "Standard" and "Little Junior," and is preferred by many large apiarists.

The "Big Jumbo" is still larger and is made with an asbestos shield. It is the best smoker for the commercial beekeeper who wants a big smoker and one that will burn long and surely. The asbestos shield makes a perfect heat protection, and is a decided advantage on this larger fuel box.

We invite comparison of Root smokers with smokers made anywhere today. They will demonstrate their own decided superiority.

Send for booklet.
"The essentials of a good Smoker."

THE A. I. ROOT COMPANY

WEST SIDE STATION, MEDINA, O.

There is a Root dealer near you who will serve you well

You Western Producers of White Honey Can Control Your Market

All you need is a central marketing agency and a binding agreement as to price.

The amount paid producers at carlot shipping points for their honey shows them no profit. Shall we continue bidding against one another, or combine to control the price within reasonable limits? The market will consume just as much honey at a few cents per pound more, and all we need is an efficient central sales agency.

A proper organization on a large scale gives strength to the market because it develops buyers' confidence and removes competitive quotations.

Write us if you are interested. We are producers, too, and have been "getting it in the neck" along with the rest.

A few more bad years will put us all out of business. We must get together and do some constructive work. "Eventually, why not now?"

The Foster Honey & Mercantile Company Boulder, Colorado

ROOT QUALITY QUEENS AND PACKAGE BEES

You need Root Queens to improve the honey-gathering qualities of your bees

QUEEN PRICES APRIL 15 to OCTOBER 15.

	1 to 9	10 to 24	25 to 49	50 to 99	100 or over
D812000—Untested	\$1.50 each.	\$1.40 each.	\$1.35 each.	\$1.25 each.	\$1.15 each.
D813000—Select untested	2.00 each.	1.90 each.	1.80 each.	1.70 each.	1.60 each.
D814000—Tested	2.50 each.	2.35 each.	2.25 each.	2.10 each.	2.00 each.
D815000—Select tested	3.00 each.	2.85 each.	2.70 each.	2.55 each.	2.40 each.

PACKAGE BEES—Experience has taught us that 2 lbs. of bees in a package will ship better than a lesser or a greater amount of bees. It has been demonstrated that better results in honey producing are obtained from 2-lb. packages of bees than from 8-lb. packages.

Prices of Bees in Two-pound Combless Packages by Express—April 15 to August 15.

	1 to 9 pkgs.	10 to 24 pkgs.	25 to 49 pkgs.	50 or more
D810800—2-lb. pkgs. of bees	\$6.00 each.	\$5.50 each.	\$5.00 each.	\$4.00 each.

Add price of queen wanted to package price given above. Large quantity lots quoted on application. These prices are F. O. B. Shipping point. NOTE: Early spring delivery on package bees will be made from Bay Minette, Alabama. Beginning May 15, package orders can be filled from Medina.

THE A. I. ROOT COMPANY, West Side Station, Medina, Ohio, U. S. A.

RELIABLE BEES AND DEPENDABLE SERVICE

We pay transportation on everything we ship. Many fast trains north and west daily.

Prices of Packages and Queens, Express or Postage Prepaid

1-lb. pkgs. with selected young queens	\$3.25 each	(for beginners)	\$6.50 each
1 1/4-lb. pkgs. with selected young queens	\$4.00 each	25c less per package on lots of 12 or more.	
2-lb. pkgs. with selected young queens	\$5.25 each	Untested, selected young queens	\$1.00 each
3-lb. pkgs. with selected young queens	\$6.25 each	Tested selected young queens	\$2.00 each
1-frame nuclei with 2 lbs. of bees and selected young queen		Wings of queens clipped free of charge, on request.	

Prompt delivery, safe arrival and satisfaction guaranteed. No disease. Let us book your order. Only 10 per cent cash with order, and balance just before shipment. Our new 1923 booklet telling all about our bees and clover seed now ready to mail. When comparing our prices with others, don't forget, "Jones pays the freight."

Buy some of the clover seed, far the best. See Classified.

M. C. BERRY & CO., Box 697, Montgomery, Ala., U. S. A.

You can have cash for your wax and old combs or cappings at the market price, or we allow a little more in exchange for supplies

Write for our terms and prices

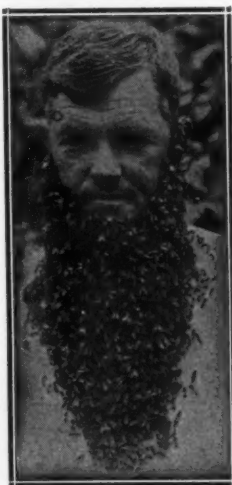
"falcon" Supplies, Queens, Foundation

Booklet, "Simplified Beekeeping for Beginners" free

Write for catalog

W. T. FALCONER MFG. COMPANY, Falconer, (NEAR JAMESTOWN) N. Y., U. S. A.

"Where the BEST Beehives come from"



*The same old man
In the same old place
With the same old whiskers
On the same old face.*

Yes, I admit that my whiskers are getting a little old, but not so my methods of queen rearing, which are slap bang up to date. We are entering the season with a great deal of enthusiasm, as everything points to a good season for all beekeepers. We have made big improvements in all lines of queen rearing and expect to—well, just write for our catalog, which tells the whole story.

PRICE LIST—Untested Queens

Before July first:

1 to 4 inclusive	\$2.00 each
5 to 9 inclusive	1.95 each
10 or more	1.90 each

After July first:

1 to 4 inclusive	\$1.50 each
5 to 9 inclusive	1.45 each
10 or more	1.40 each

Breeding queens service guaranteed for the season 10.00 each

JAY SMITH ROUTE 3 **Vincennes, Ind.**

**Quality and Service From
FLORIDA BRED GENUINE THREE
BAND LEATHER ITALIANS**

Shipped on good combs of natural stores insures arrival in fresh condition, and quickly build strong, hustling colonies. Constant improvement in select breeding from bees possessed with rare qualities of vigor, gentleness and beauty enables us to offer a great honey gathering strain. Safe arrival and satisfaction guaranteed. No disease. Certificate of inspection with each shipment. 20 per cent cash books order, balance before shipment.

Prices include choice queens.

	1 to 11	12 to 24	25 or more
2 lbs.	\$4.50	\$4.25	\$4.00
3 lbs.	5.50	5.25	5.00
3-fr. nuclei	5.75	5.50	5.25
10-fr. colonies	\$15.00.		

M. L. NISBET & BRO.
P. O., Bainbridge, Ga.

PACKAGE BEES FOR 1923

THREE-BAND ITALIANS ONLY. BRED FOR BUSINESS

A 2-pound package of the Yancey Hustlers, with a select untested queen, for \$5.00; 25 or more, \$4.75 each. Attractive prices on large lots. One-fifth cash books your order. Safe arrival and satisfaction guaranteed on every package and queen shipped. Orders are now coming in for spring delivery. Better send in yours and make sure of shipping date. We do not accept more orders than we can fill promptly.

CANEY VALLEY APIARIES, Bay City, Texas
YANCEY BROS., OWNERS



CARNIOLANS

Are excellent winterers, coming out in the spring bright and clean and strong in numbers, and with vitality but little diminished, if provided with brood stores and well protected.

Carniolans breed up rapidly during the changeable weather of the spring months. They will rear brood under adverse conditions more steadily than any other bees, if they are well protected and are provided with abundant stores.

The excellent early breeding characteristics of the Carniolans, like their excellent wintering qualities, are of immense importance. Many of our best honey flows follow long, severe winters and cold, backward springs. Bees must be gotten strong to take advantage of the early honey flow. Success in honey production can come only by having the full force of workers ready when the flow opens.

Ask for my FREE paper, "Merits of the Carniolan Bee," describing these bees more fully, the best methods of management for producing comb honey and for producing extracted honey, prices of queens, etc.

ALBERT G. HANN
Glen Gardner, New Jersey.



The Engravings appearing in this publication are made by the

Waterloo Engraving & Service Co.
Waterloo, Iowa

Engravers, Electrotypers, Commercial Photographers,
Photo Retouchers, Designers

Write if you need designs of Signature Cuts, Letter Heads,
Labels, Etc.



BURR COMBS

Comments on Current Topics

By Frank C. Pellett

New Things that are Old

We beekeepers are constantly making discoveries which are thought to be new, but which in fact have been tried and discussed long ago. It is rare for a man to make an entirely new discovery. A new application to an old one will often add the finishing touches to make it useful, where before it was of no practical importance.

One of the most interesting things about reading the old bee magazines lies in finding so many of our so-called new things discussed in an entirely different way than we are considering them now. Not long since an Iowa beekeeper invented split sections and thought he had found something new. However, those engaged in the supply business had already tried the split section and discarded it because the beekeepers would not buy it in sufficient quantity to make it profitable.

Some of the old things have been tried so long as to be forgotten. Now they are tried all over again, and it often happens that the second trial develops such a way as to overcome the former difficulty.

One of the new-old things is the wood base foundation, which was offered with so much promise last season. This year we hear little about it. A reference to the British Bee Journal for the year 1880 discloses extended discussion of what appears to be almost identically the same thing. Mr. Cowan explains the difficulties which appeared in connection with its use and which led to discarding it more than forty years ago.

Was There a Native Honeybee?

There has been considerable comment in the bee magazines of late on the statement that Columbus reported honey as a product of the newly-discovered America, and writers have assumed that the honeybee must have been present if honey was found. All these writers have overlooked the fact that stingless bees are native to the American tropics and that they store honey. It was thus possible that honey was found by Columbus long before the honeybee was introduced.

Confusion of Terms

There is much confusion among beekeepers respecting the use of terms in common use. Many years ago, when new races of bees were being introduced from abroad, a well-known queen breeder named his strain of bees the "Adel Bees" and began offering Adel queens as something especially desirable. Adel was taken from a German word meaning noble or excellent and was simply designed as a trade-mark for a particular strain of bees. However, many persons assumed that it re-

ferred to a new race or to bees from some particular foreign locality, and many references giving that impression are to be found in the bee magazines of days gone by.

Similar confusion prevails now with reference to hives and frames. There are frequent references to the Hoffman hive. There is no Hoffman hive and the term is usually applied to Langstroth hives with Hoffman frames. The Hoffman frame is the regular Langstroth frame with self-spacing end-bars such as were first used by Julius Hoffman. Beginners find it difficult to learn that Langstroth frames and Hoffman frames may refer to the same thing. Langstroth determined the size, and hence the frame is called by his name. Hoffman added the self-spacing end-bar and again it is called by his name. Langstroth frames refer to only one size, while Hoffman frames may be frames of any size with the end spacing feature.

The Better Way

Langstroth has been called "The Father of American Beekeeping," and perhaps has done more to deserve the title than any other man. During his lifetime, however, he was the target of much bitter criticism, and did not receive full credit for his services to the industry.

After his death a fund was raised to erect a monument to his memory in much the same manner as a similar memorial has been raised for Doctor Miller. In the case of Langstroth the customary form of erecting a marble slab was followed:

"Inscribed to the Memory of Rev. Lorenzo Lorain Langstroth, the Father of American Beekeeping."

How much better is the library provided as a memorial for Doctor Miller. The library will be of constant service to any student of beekeeping who wishes to take advantage of it. A monument is at its best when created, and the letters will gradually fade. The library will grow with the years and increase in value as time goes by. In a century from now it should have grown to such importance as to be well known to the beekeepers of the entire world. It is hard to understand why we do not adopt more practical methods of providing memorials for our departed friends.

Water for Bees in Winter

With reference to F. B. Paddock's article on water in winter in the March issue the late J. L. Strong, of Clarinda, Iowa, a beekeeper of long experience, used to place small cakes of ice in the hives when the bees became restless in the cellar. According to his report this served to quiet

the bees, which took the water eagerly as the ice melted.

Does Beekeeping Pay?

Much interest has been manifested in the series of articles "Does Beekeeping Pay?" in the American Bee Journal. It is evident from the accounts of the different writers that conditions make a great difference in the profits secured. From locations far from market, where a large part of the crop must be consumed in high freight rates comes the statement that beekeeping is not profitable under present conditions. However, the complaint has been general for two years past that the production of wheat, cotton, corn, oats, cattle and many other agricultural products has not been a paying proposition. Beekeeping has suffered from the same difficulties common to other lines of production.

Most of the letters are optimistic, and although some incline to the belief that the profit is smaller than it should be, most beekeepers say that beekeeping does pay. The fact of the matter is that beekeeping, under suitable conditions, is a profitable enterprise. No business should be judged by results obtained under unfavorable conditions, although some beekeepers have worked out a system of management which brings satisfactory returns under adverse circumstances.

Having had the opportunity to visit many leading beemen in various parts of America I have no hesitation in saying that it is very evident that many of them are making it pay. I happen to know men who follow beekeeping as an exclusive business who live in the finest homes in the towns in which they live, who drive fine cars, who send their children to college and who spend their winters in a warm climate. Considering the investment and labor necessary to handle the business, beekeeping compares favorably with any other business with which I am familiar—in a good location.

Restrictions on Importation of Queens

There has been some talk about prohibiting all importation of bees and queens from all countries for a period of two years for fear of Isle of Wight disease. The whole matter is now in the hands of the United States Department of Agriculture and the Department can be trusted to make such restrictions as will avoid any danger of introducing disease. By proper quarantine it is easy to guard against introduction of disease while making it possible for those interested in securing new stock from abroad to do so.

We are advised that the Department will shortly permit importation under such restrictions as seem necessary to safeguard the beekeeping interests.

THIS IS THE
'SIGN' ON EACH
CYPRESS BOARD



DON'T GUESS
MAKE SURE,
'HAVE A LOOK

For all uses that invite decay (for instance,
bottoms) demand

"ALL-HART"

"Tidewater" Cypress

"THE WOOD ETERNAL"

The "arrow" on the end of each board identifies the genuine product of the cypress mills whose CHARACTER of timber, methods of manufacture, and complete responsibility enable them to be members of the Association.

THIS FACT IS YOUR PROTECTION.

ACCEPT NONE BUT TRADE-MARKED "TIDEWATER" CYPRESS



SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION

1251 Poydras Building, New Orleans, La., or 1251 Graham Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's

If he hasn't it, LET US KNOW

**THE DIAMOND
MATCH CO.**

(APIARY DEPT.)

MANUFACTURERS OF

Beekeepers' Supplies
CHICO, CAL., U. S. A.

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

EASTERN DISTRIBUTORS

HOFFMAN & HAUCK, 1331 Ocean Ave.
WOODHAVEN, N. Y.

The Diamond Match Company requires responsible agents in the Central States who are in a position to handle car load lots.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to the Diamond Match Co. for prices and for their Beekeepers' Supply Catalog.

They own their own timberlands and sawmills, from the tree to the finished product; no middleman takes out a profit.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

ALUMINUM HONEYCOMBS

The Diamond Match Co. and their agents are the sole distributors in the United States of the Aluminum Honeycombs, manufactured by the Duffy-Diehl Co., Inc., of Pasadena, Calif. Write for descriptive pamphlets. Eastern beekeepers should send their orders for the Diamond Match Co.'s supplies to Hoffman & Hauck, 1331 Ocean Avenue, Woodhaven, N. Y.

DIAMOND MATCH CO., Apiary Department
CHICO, CALIFORNIA

The Best Sections

That you can buy will very certainly increase the profit on your comb honey and help greatly in the marketing of it. The lowest possible amount of breakage from folding means a lower price per section. Fine, clear white sections bring quicker sales and with less selling effort. Therefore bigger returns on your comb honey.

HOW WE MAKE THE BEST SECTIONS

The best sections can only be secured from the manufacturer who is located, as we are, in the midst of native basswood timber. From the woods of northern Ohio there comes to our saw mill at Medina some of the finest and largest basswood logs that we use and that are to be had anywhere.

Our own timber experts select the trees in the woods, insuring for us the highest quality of logs and for you the finest sections. Most of the logs are sawed by our own saw-mill, but, if at too far a distance from our plant some are sawed by local mills and the timber hauled to our yard by the timber owners. The best parts of these logs are used in making Root "Quality" sections. The boards are air-dried in large covered sheds, and after the necessary shrinkage has taken place they are manufactured into sections. First-class sections can be made only from the lumber that is properly piled immediately after sawing.

ROOT "Quality" sections have our famous V-groove, which allows them to be folded without breaking; to produce a section with no loose corners and to fold absolutely square. Our experience gained in 45 years of making sections has enabled us to develop a V-cut groove that is perfectly smooth. Your only requirement of a section is that you be able to fold that section into shape once. Yet, in one of our section tests we folded a number of our sections and the first section broke accidentally at the 170th fold, and others stood considerably more. One section was still unbroken when folded 1,100 times. Such is the quality of the material in our sections.

ROOT sections are polished on both sides and the dovetailing is clean-cut and always tight enough to hold.

Your honey should be stored in the best. We are Making that best for you.

Cross-section view of V-groove showing flat groove bottom.



Note perfect fold at all four corners.

Send for Sample of our Sections



The A. I. Root Company's portable saw mill at Medina cutting up basswood logs specially selected by Root timber experts. The lumber for millions of sections is sawed annually by this mill.

Send for Sample—Buy the Best

A. I. ROOT COMPANY, Medina, O.

West Side Station

THERE IS A ROOT DEALER NEAR YOU WHO WILL SERVE YOU WELL